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WHAT IS A MEDICAL EXPERT?

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THE answer is very simple. There is no such animal. The phrase is in common use and is supposed to apply to doctors and other scientific men who have more knowledge than their fellows on a given subject. There may be experts in other professions but surely there are none in medicine. Any doctor, no matter how wise or ignorant, no matter how honest or dishonest, can qualify before our courts as an expert. "Where and when did you graduate?" "Are you duly licensed to practice your profession in this state?" These are the two questions asked by the lawyers to qualify the doctor as an expert. If further information is insisted upon, he is asked if in his practice he has "frequently treated cases similar to the one under consideration." If the doctor replies in the affirmative, he is qualified. In other words, the doctor is an expert because he admits it. Such admission does not make him an expert any more than the admission by a person that he is a humorist makes him one. The courts are bound to accept this self-laudation as a fact and, with unbending gravity, the judge, just as if he didn't see the joke, permits the most ignorant medical ass to give his opinion to the jury with the same weight as if Hippocrates himself was talking.

The medical expert is a legal fiction. The idea in law dates from the time when doctors wore watch fobs, stove-pipe hats and ivory headed canes. In those days dignity and pose were valid substitutes for medical knowledge. The very dignity with which our judges are clad enveloped with a mantle of wisdom their fellows of the allied profession. The function of the expert was to bring to the ignorant jurors that erudite solution of medical mystery which was supposed to be beyond the common sense of the average juror. And so expert was arrayed against expert. Confused in the maze of verbose technicalities, the jury decided the case largely upon the adroitness, glibness or plausibility of one of the experts.

In these latter days when osteopaths and chiropractors are licensed to practice in most states, they also have arrived at the dignity of medical experts. The fact that the law has recognized them gives them a standing in courts not inferior to that of the medical profession. I have heard them talk of subluxations, dislocations of vertebræ, impingements on nerves and other absurd pathology as the cause of neurasthenia, hysteria and cerebral hemorrhage and the jury takes it all with the same weight as opinions of physicians. All horses look alike to a blind man and so far as the average juror is able to distinguish between the various schools of practice, he might as well be blind.

All experts are the same to the juror. In the Thaw case a "distinguished" psychiatric expert was unable to tell what an Argyll-Robertson pupil or a Romberg sign was. An expert, in my hearing, said that the esophagus passed through the foramen magnum. Another identified the sacro-iliac synchondrosis in an *x*-ray picture as two symmetrical fractures of the pelvis. Another said that the highly arched palate of an accused murderer, by pressing on the base of the brain, had produced imbecility. Another said that a slight blow on the head had so lowered the vitality of the injured woman as to lead to the development of cancer of the stomach. I could go on indefinitely testifying to the inexpertness of the expert, but probably you all have had similar experiences.

We must get rid of the obsolete, useless and misleading term of expert and substitute for it the logical term of medical witness. There is

really little difference whether the medical witness testifies to fact or opinion, providing the doctor is honest and realizes that his sole function as a witness is to put such facts as are within his knowledge before the jury, and to give only such opinions as will enlighten the jury on technical matters and help them to reach a just verdict. The present custom of using doctors as assistants to the attorneys in winning the case, though much to be condemned, can hardly be remedied, because under the present system of court procedure, where the lawyers are engaged in a contest to win a verdict rather than to secure justice, it is inevitable that they should seek from the doctor only those facts and those opinions which favor their sides. They do not want the "whole truth" nor are they particular in getting nothing but the truth.

Although using doctors for their own base purposes, they are not at all complimentary to our profession, but poke fun at us because our opinions vary so widely. To my mind it is rather remarkable that upon medical questions we differ so little. In every lawsuit there are two lawyers who differ pugnaciously upon the facts and law involved in the case. Certainly medical men are not more divergent. Lawyers denounce opinion evidence in profane terms, and yet they accept without remark testimony as to fact, which in my view is much less trustworthy. In a case of a murder in St. Paul which took place in a butcher shop in the month of February, when the thermometer registered between twenty and thirty degrees below zero, five witnesses who passed the butcher shop testified that on that day they saw through the windows certain persons in the shop. The defense brought six witnesses who swore that they passed the place at the same hour and that the windows were so completely covered with frost that nothing inside was visible. Testimony as to fact, in regard to the average personal injury suit, is always discordant. Two persons witnessing an accident from the same point will tell different stories about it. Since the memory and observation of concrete events is so full of contradictions, why are our lawyer friends so sneering or sarcastic when two physicians differ in opinion on abstract matters?

Medical testimony can never be regulated. It cannot be changed except by public opinion, which will ultimately be educated to condemn the dishonest and approve the honest medical witness. Various resolutions by medical societies to change the method of legal procedure, to have "experts" chosen by the judge or by agreement among the lawyers, emphasize the pathetic helplessness of the profession in regulating the practice of law. As well ask the lawyers in to settle our ethical disputes. It is a good bet that the lawyers don't want the system changed. The lawyers as well as the doctors suffer from dishonest men in their ranks, and it appears to me to be an even break.

Medical testimony in personal injury cases is seldom effective. It rarely happens that, in cases in which the medical facts are not objective, the jury is able to comprehend the opinions of the doctors. It is apparent that where an arm or leg is amputated the jury can measure its value in currency; but in those cases in which the injury is not so obvious, such as strains of the back, sacro-iliac injury, neurasthenia, hysteria, paralysis and malingering the jury is wholly at sea. They know nothing of the pathology or psychology of the cases, they are unable to determine the nature of the symptoms, they cannot estimate the prognosis, and when, as happens in most cases, they find a disagreement among the doctors, they utterly disregard the medical opinion and decide upon the probability or absurdity of the claims made by the plaintiff.

Let us suppose that a jury composed of twelve doctors was called to sit on a case in which there was a question of infringement on a dye process, and it had to listen for several days to the opinions of six expert chemists on each side. In what frame of mind would the medical jury find itself, and how much more intelligent would be its verdict than the verdict rendered by the laity in complex medical cases? The tendency of the juries to throw out all expert testimony would be equally strong in both cases. We must appreciate that expert testimony is not always used to instruct the jury, but is too often used to persuade them in one direction or another.

Why do juries fail to give due weight to medical testimony? The reasons are many. Principal among them is the fact that most juries are decidedly inferior in intelligence. They represent the average run of people. They are in some cities selected by taking the sixth or tenth name in the page of a city directory opened at random, with the idea of avoiding selection, and

of obtaining an average jury by chance. In small towns the registered voters are selected by lot to act as jurors. In this way the trial of law suits by intelligent, selected jurors is avoided and a jury that represents the average intelligence of the community is secured.

What is the average intelligence of our juries? If the psychological tests of the army are to be relied upon, the average intelligence of the people of this country is between twelve and thirteen years. Twenty-two per cent of them are in the feeble-minded and moron classes, and 20 per cent in addition are in the dull normal class, giving a total of 42 per cent who in industry grade as common labor or less and who cannot progress beyond the seventh grade in school. In the army 24 per cent were illiterates when judged by their ability to read an article in the newspapers and to write a letter to their folks at home. Of the recruits who were born in foreign countries, 45 per cent were under eleven years of mental age and could not advance beyond the fifth grade in school. These tests were applied to two million men carefully selected by local examining boards and represent a higher type than the general public. It is not improbable that at least 50 per cent of the general public are juvenile mentally, and are incapable of bringing to the consideration of any question, however important, more intelligence than is found in a twelve or thirteen year old child.

A jury which represents the average intelligence, therefore, must be lacking in that acuteness of perception which would enable it to discriminate between varying facts that are called to its notice. It would manifestly lack that power of sustained attention which would form the basis of a proper comparison of facts. It would also be deficient in associative memory, by which it could line up the testimony of one witness with another. As our judgments are based in a large degree upon these three faculties, it will be recognized what a handicap the average jury must be laboring under in the consideration of any but the simplest and most objective of problems. How far into their consciousness does medical testimony penetrate? What to them are the fine niceties of diagnosis? How much do they comprehend of pathology? How very elementary must be their reasoning upon the relation of cause and effect in a given case?

Scrutinize the faces of the average jury when a medical witness is on the stand. Is their expression one of absorbed attention or of blank stupidity? Are they thinking or just appearing to think? Well behaved, orderly, decorous as if in church they sit with owl-like gravity listening to words they do not understand about medical facts which they cannot comprehend. And yet they look, and are, as wise as owls.

In addition to the low average intelligence of juries, there is another factor quite as important that influences their verdicts. I refer to their emotional nature. While the finer emotions are not characteristic of those of low intelligence, the primitive emotions are very strong. Sympathy for the unfortunate is apt to be strongly manifest in personal injury cases. The lawyer for the plaintiff skillfully sees to it that the agonies of the injured awaken a tender response in the hearts of the jury by oratory of the sympathetic type. Unable adequately to intelligently reason about the facts, the jury is extremely responsive to the tender appeal of sympathy. Prejudice is another emotion that is active in these cases. The resentment of the injured at the carelessness of the defendant, is easily transferred to the jury, especially if it be a soulless corporation that is to blame.

At a scarcely less disadvantage the doctor appears in the courtroom. However intelligent he may be at the operating table or the bedside, he does not shine conspicuously on the witness stand. His appearance indicates nervousness, timidity and apprehension. Although vociferous in ordinary conversation, his voice deserts him and he can be heard with difficulty by the jury or the lawyers. His professional manner of speech clings to him and he uses technical language. He calls a joint an "articulation" or a "synchondrosis"; he talks of the "terminal phalanges" instead of the last joints of the toes; he prefers the term "ptosis" to the more comprehensible word drooping of the lid; he chooses "emesis" rather than vomiting, "ecchymosis" rather than black and blue and in general surrounds a description of simple injury with a polysyllabic barrage. No wonder the jury wears an adenoid expression!

Clearness of thought and expression is possessed by few medical witnesses. There is generally a muddy conception of the facts and a foggy expression of them which renders his testimony ineffective and tiresome. He usually

lacks order in the narration of symptoms and is illogical in his deductions. Omitting important facts, he stresses the less vital elements of the case, and either exaggerates or minimizes the seriousness of the injury.

On cross examination the medical witness is at his worst. He is afraid that the lawyer will tangle him up and make him appear ridiculous. He therefore adopts a hostile attitude, argues with the lawyer, is evasive in his answers to questions or hides behind technicalities. Afraid to say "I don't know," he stumbles into difficulties and traps that are laid for him. He becomes transformed from a witness whose function it is to instruct the jury as to the medical facts of the case, into a defender of his opinions or into an assistant counsel for his side of the case. The jury is quick to see this attitude of prejudice, and to recognize in his evasions and arguments a lack of that fairness expected in a medical witness. He seems to be unable to reason with any clearness when on the stand, and becomes a victim of the excitement and confusion.

However honest a medical witness may be, if he fails to get across to the jury the facts of a case and his opinion of it, his testimony goes for naught. He should never forget the low grade of intelligence possessed by the average jury, and should frame his testimony in words and phrases in the common knowledge of children. He should be careful not to outstrip their power of comprehension. While obviously the lawyer is the central figure in the trial, the jury is the one that decides the issue, and to them the testimony should be directed. If I should be asked to name the greatest fault of the medical witness it would be talking over the heads of the jury.

Unfortunately not all medical witnesses are honest. Many lend themselves to the purposes of unscrupulous lawyers, and frame up cases for them. I remember a case in which unequal pupils were an important factor. The doctor in charge of the case subsequently boasted of the way he had fooled me by dropping a little atropine in one eye. Another doctor testified to the classical epileptic seizure which he had witnessed in an injured man, and subsequently admitted that it was made out of whole cloth, and that the plaintiff had never had a fit. In another case the doctor had drilled the patient to simulate paraplegia with such skill that only the indiscreet conduct of the plaintiff, who was observed walking at night, revealed the deception. I could narrate many experiences in which I have found cases that were framed by medical men. I presume that there is the same amount of dishonesty among doctors that there is in the ordinary run of professional men. Honesty is an individual rather than a professional trait.

To sum up, the medical "expert" is not an expert; he is a medical witness. His function is to instruct the jury on those technical points of a case that are beyond their realm of knowledge. The present system, bad as it is, is probably the best we can devise. The opprobrium cast on medical witnesses is probably well deserved. As a rule medical testimony is ineffective, due to the tendency of juries to become so confused between conflicting opinions that they must disregard it. The remedy is far to seek. If I should suggest one it would be a great deal more of professional honesty, and a greater capacity for the doctor to express his opinions intelligently and clearly, with due recognition of the fact that average jurymen are mentally juvenile, and that one must talk down to their level of comprehension.

MASSIVE COLLAPSE OF THE LUNG: WITH REPORT OF NECROPSY*

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THE literature within recent years has been replete with articles on massive collapse of the lung, indicating its frequency. It is one of the interesting sidelights of medicine that a condition so definite in its entity should have remained unrecognized so many years and evaded the diagnostic acumen of many clinicians. Since attention was first called to its occurrence by W. Pasteur,[1] its frequency has become apparent and its clinical identification simple.

Instead of the usual term "postoperative massive collapse of the lung," I believe that a happier term in its description would be a revival of "atelectasis of the lung," as suggested by Jackson and Lee,[2] Scott,[3] etc., since we know that it is not strictly confined to postoperative situations, and has been identified in the course of pneumonic processes, not postoperative in their development, as indicated by Norris and Landis,[4] and Rigler.[5] It is entirely likely, also, that the collapse is not always massive, since clinical observations indicate that various gradations of collapse occur from a simple lobular type to one involving the whole of one or large portions of both lungs. The occurrence of a lobular collapse, indicating collapse of focal areas not large enough to include a major portion of a lobe, is now thought to exist by many students of the condition, and certain clinical observations and roentgenographic studies would support this view (Fig. 1). Unfortunately, this is not easily substantiated by autopsy findings because of the good prognosis in the anatomically more restricted case, although Jackson and Lee quoted Paul as having proved its presence at necropsy.

Many classical articles have appeared within recent years, usually with a review of the literature, that tend to a repetition of historical data, a practice which might well be discontinued in view of the prolixity of medical literature in general, and it is not my intention to repeat unnecessary detail.

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It is astonishing how frequently collapse of the lung may be identified in practice when its existence is within the knowledge of the observer. Pasteur[6] pointed out in 1914 that it occurred in twelve instances in two hundred and one lung complications in Middlesex Hospital, a frequency more common than massive embolism, abscess or pleural effusion, but in his opinion not as frequent as pneumonia, bronchitis or dry pleurisy.

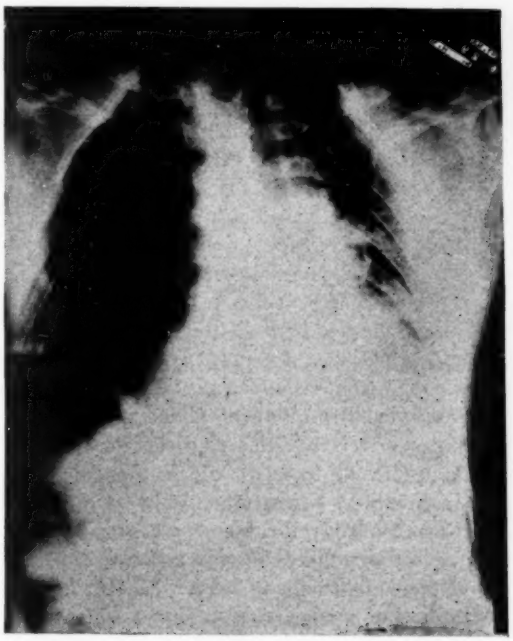

Fig. 1. Partial atelectasis of right lower lobe. Note extreme displacement of heart and trachea to right with atelectasis of right lower lobe of only partial degree; also compensatory emphysema of left side.

In view of recent studies (Cutler),[7] embolism is doubtless the most frequent postoperative pulmonary complication, and is probably the initial cause in the development of nearly all cases of postoperative pneumonia, and a factor in the development of so-called "dry pleurisy," which is probably no more than an infarction. If we eliminate embolism in its broad aspect, and bron-

chitis, collapse of the lung is undoubtedly the most frequent complication developing in the lungs after surgical procedure. Dingley and Elliott[8] observed eleven cases in two years, and since the condition was first recognized by me[9] in November, 1920, I have observed fifteen cases in the surgical practice under the immediate care of the Duluth Clinic, or in personal consultation. It is difficult to estimate the incidence of the disease in surgical practice, because of failure in its recognition, and until the disease is more commonly recognized by all practitioners, available statistics will be more or less conjectural. There is no denial, however, of its relative frequency and its acceptance as a clinical entity, as a review of the literature would indicate.

A study of the various etiological factors tending to induce collapse of the lung indicates that one or both of two factors receive virtually all consideration. Some observers believe that the immobility of the diaphragm is a major factor, since Pasteur's original work in 1890, when he observed it as occurring in thirty-four cases of post-diphtheritic paralysis of the diaphragm and other accessory respiratory muscles. Its occurrence, particularly after operations resulting in relative immobilization of the diaphragm, *i.e.*, in operations on the abdomen or chest, or on the lower extremities necessitating the recumbent posture, shows that decreased respiratory activity, whether from its effect on the diaphragm or pulmonary excursion in general, is at least a partial factor. It is likewise true that obstruction of the bronchial tree, to which the collapsed area is tributary, is instrumental in its development, and probably the immediate precipitating cause. This is supported by Lichtheim's[10] observations made in 1878 and later, clinically, by the observation of many writers. The relief of the condition, oftentimes immediate and startling, by the evacuation, either spontaneously or bronchoscopically, of the obstructing mucus (Jackson and Lee, Vinson,[11] Sante,[12] etc.), is further proof of the relationship between obstruction of the bronchial tubes and the development of the disease. A case report, which follows in this paper, is to my mind illustrative of the relative proportionate significance of the two factors.

Various writers, notably Mastirs, Spittler and McNamers[13] have indicated that partial atelectasis is a common accompaniment in many patients who have operations performed on them, necessitating the recumbent and supine position. Others have felt that vasomotor influences may be of importance, although this is difficult to prove and is doubted by other observers. The fact remains that the development of the condition is unquestionably favored by relative immobilization of the muscles of respiration following surgical attack on the abdominal organs and the attack immediately initiated as far as clinical evidences are concerned by the lodgment of mucus or other obstructing agents in the bronchial tubes proximal to the atelectatic area.

CLINICAL CAUSE AND SYMPTOMS

The clinical course and the symptoms of the disease have been so frequently described that a very brief enumeration is sufficient. The condition develops almost invariably within forty-eight hours after an operation necessitating bed rest—usually an attack on some abdominal viscus. The clinical onset is usually quite rapid, but premonitory symptoms, such as slight respiratory distress, a low degree of temperature elevation, etc., probably are present, though frequently confused with the usual postoperative reaction. The most frequent symptoms are pain in the chest, usually of moderate degree; cough, unproductive at first, later with the production of more or less viscid, tenacious, greenish-yellow sputum; dyspnea, at times extreme; and cyanosis. Many of these symptoms are no doubt due to the sudden and rapid mechanical anatomical alteration of the organs within the thorax, since the toxic factor seems to be comparatively less than in the acute inflammatory pulmonary complication.

The observation, postmortem, that the atelectatic area is of a dark bluish hue, sharply demarcated from the surrounding well aerated lung, would indicate that an unaerated shunt, as described by Lundsgaard and Van Slyke,[14] is a factor in inducing the cyanotic state. Although the cyanosis is frequently more pronounced at first, it usually persists in some degree until convalescence begins.

The respiratory rate is usually out of proportion to the increase in temperature curve or the increase in the pulse rate. The fever varies considerably; it may mount to 104, and it may be as low as 100 to 101 degrees. It is observed that the temperature, pulse and respiration elevation may be subject to diurnal variation.

Roentgenographic evidence and the physical examination are sufficient to identify the condition. The essential and characteristic feature is the displacement of the mediastinal structures and the elevation of the diaphragm toward the affected area. This is extreme, although it is conceivable that it varies in degree, depending upon the amount of atelectasis present. I have seen *x*-ray pictures in which the displacement of the heart is relatively slight and the elevation of the diaphragm minimal, yet characteristic in its variation from the normal. In the more marked cases the diaphragmatic elevation is extreme, and the displacement of the mediastinal structure is almost grotesque—if one may use the term (Figs. 2 and 3). It has been noted by some observers that the deviation of the trachea and the upper mediastinal structures is not as conspicuous in the left sided cases as it is in those occurring on the right. This is probably due to the course of the left bronchus under the arch of the aorta, militating somewhat against free excursion toward the left. There is also a tendency for the elevation of the diaphragm to be slightly more marked on the left than on the right, possibly because of the presence of the liver on the right side (Figs. 2 and 3).

If one bears in mind the displacement of the mediastinum and its contents, and the elevation of the diaphragm toward the affected area, the physical signs are not difficult of interpretation. On inspection it is observed that the respiratory movements on the affected side are greatly diminished and the ribs in closer approximation. This is to be anticipated from the reduction in the area of pulmonary activity. On percussion, the involved pulmonary area and the displaced heart yield a dull and unusually flat note, because of the absence of air in the underlying structures. On the right side, this area of dullness or flatness extends to the base, and is confluent with the liver dullness. On the left side, however, the elevation of the diaphragm and the encroachment of the air-containing stomach reveals an area of tympany at the lower rib margin, which has been confused by the unwary as an indication of a pneumothorax. As is to be expected, the unaffected side and oftentimes the upper lobe on the affected side are hyperresonant, because of

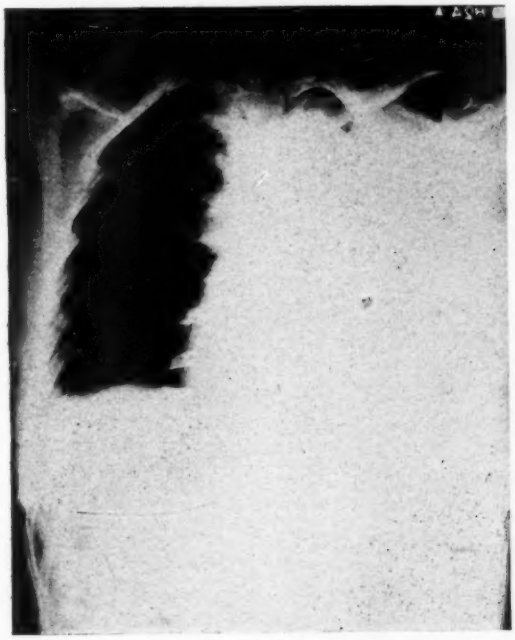

Fig. 2. Atelectasis of both lower lobes of right lung. Note displacement of heart and trachea to right and confluence of collapsed lung, heart and liver areas, with absence of demarcation.

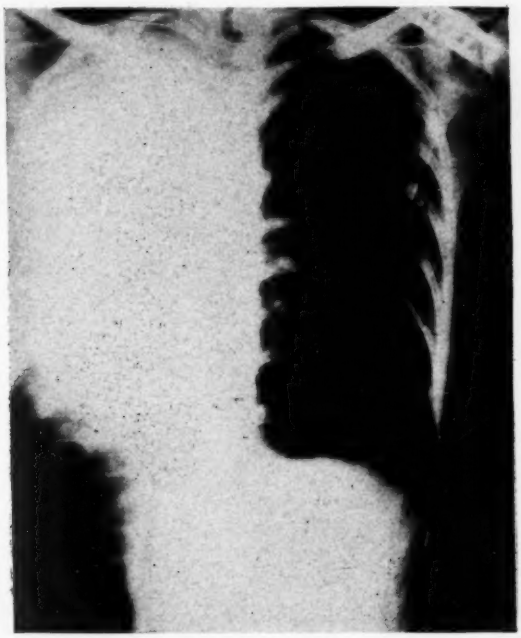

Fig. 3. Collapse of larger part of left lung. Note compensatory emphysema on right with depression of diaphragm. The left portion of the diaphragm is high, the trachea only morerately deflected to the left and the right border of the heart not discerned to right of sternum. Roentgenogram taken first day of atelectasis.

the compensatory hyperactivity. On ausculation, breath sounds are increased in all the uninvolved areas, but at the site affected there is at times a diminution and at times an extreme increase in the transmission of the breath sounds, depending, no doubt, upon the degree and the site of occlusion in the bronchus obstructed. In my experience, the breath sounds are, as a rule, extremely harsh, and distinctly bronchial, or even tracheal in intensity. Many observers, however, mention diminution in the breath sounds in the early stages of the condition. It is observed that the apex beat invariably is drawn very materially towards the affected side; in the right sided cases, to the right of the sternum, or at the xiphoid cartilage—so much so that sometimes it has been misdiagnosed as a dextrocardia. In the left sided cases it is displaced frequently to the anterior margin of the axilla or even into the axillary space.

During convalescence the physical signs improve, and the heart and diaphragm slowly assume the normal position, with the gradual expansion of the non-functioning lung.

The appended illustrations show well the extent to which the atelectatic area becomes consolidated so that it is not demarcated roentgenologically from the adjacent cardiac and hepatic structures. They also illustrate the reason for the difference in the physical signs on the right and left side, because of the subjacent liver and stomach respectively. The more marked deviation of the trachea in the right sided cases is also manifest.

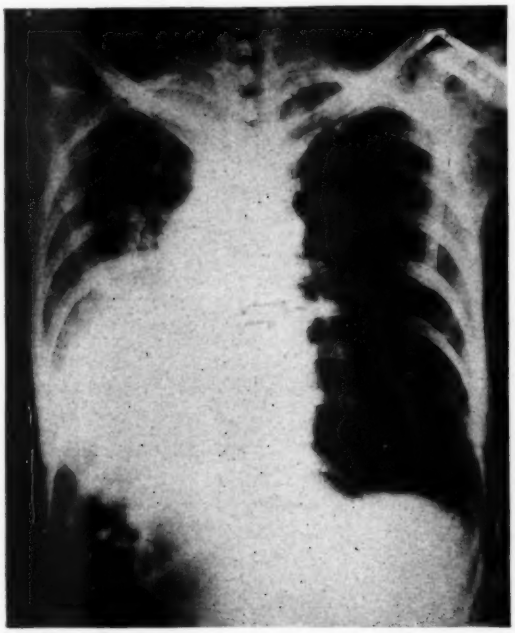

Fig. 4. Same case as Figure 3, with collapse considerably lessened in degree. The diaphragm is still markedly elevated on the left, but the heart outline is noted just to the right of the midline. This roentgenogram was taken after employing Sante's maneuver on June 10, 1927.

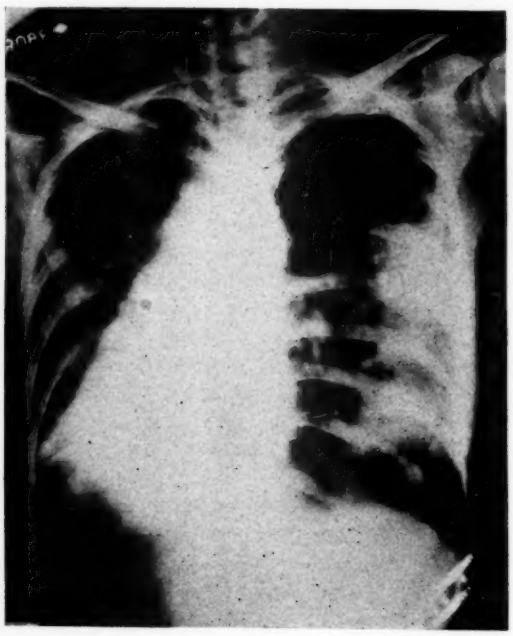

Fig. 5. Roentgenogram taken on June 12, 1927, after collapse was much improved but bronchopneumonia had developed on the opposite side. Note the lack of influence of the pneumonia on the position of the diaphragm on the right and on the position of the heart—a distinguishing evidence between pneumonia and atelectasis.

TREATMENT

Because of the good prognosis, expectant treatment is usually all that is necessary, particularly in the cases which are limited in their involvement to one lobe or less. Absolute rest, deep breathing exercises and symptomatic treatment are usually all that is necessary.

In many cases the onset is accompanied by severe respiratory distress, with cyanosis, and indications of heart failure. In a case of this kind, on one occasion, I have felt that a venesection of 500 c.c. of blood was a life saving measure.

At times a rapid convalescence follows the expectoration of a large amount of thick,

muco-purulent sputum. This occasionally occurs spontaneously, with the sudden evacuation of four to eight ounces of a thick, viscid, tenacious sputum, usually followed by prompt relief to the patient, and an improvement in the constitutional and physical signs as well. Bronchoscopic aspiration suggested and carried out by Jackson and Lee, Harrington and others, is of undoubted value in inducing clinical improvement.

Sante[12] has recently suggested turning the patient on the unaffected side and inducing voluntary coughing. In Sante's case this was promptly followed by the expectoration of copious amounts of sputum, with great relief to the patient, and rapid clinical improvement. In the only patient on whom I tried this maneuver, there was slight response, but since this was with the patient who is the basis of the attached protocol, it can readily be seen that a marked response could hardly be expected. It is too early to draw any conclusions as to the value of Sante's maneuver. It has been well known, and pointed out by Jackson and Lee,[1] and also by Vincent,[11] that aspiration of the obstructing obstacle, be it a foreign body or mucus, causes prompt relief and clinical improvement. Farris[15] has suggested performing an artificial pneumothorax on the affected side, on the assumption that the replacement of the dislocated heart and mediastinum is of extreme value in inducing a clinical improvement, in restoring these vital organs to their normal situation and establishing a mechanical balance. It is his belief that the distress is chiefly due to the mechanical displacement of the mediastinal structures rather than to any other factor. In certain selected cases this procedure might be of value, but the treatment seems radical except as an extreme measure.

The appended case report I consider valuable from the fact that an autopsy was obtained, disclosing some features which may have a relationship to the etiology of the condition.

CASE REPORT

Mrs. C. S., white, aged 44, a housewife.

The family and marital history is essentially negative to the present complaint. The patient had married twice, having had one child by the first marriage. There is no history of any miscarriages.

Past History.—The patient has had stomach trouble for four years, but has always been well otherwise, until January, 1927, when she had an acute respiratory infection. Since that time she has had a tendency to gas and bloating, not particularly relative to meals, but occurring periodically and lasting for several hours, accompanied by pain in the epigastrium. The patient also has had a feeling of malaise, weakness, palpitation of the heart, and attacks of paroxysmal coughing.

Physical Examination (Interne's Notes).—The pupils are equal, and react to light and accommodation. The teeth are in good condition. There is no evidence of any infection in the nose or throat. No glands are palpable in the neck. The thyroid is of normal size.

The examination of the chest shows the lungs to be entirely normal. The heart action is regular, the apex is just within the nipple line, the heart tones of normal intensity, and no murmurs are audible.

Abdominal examination shows a tendency to laxity of the abdominal wall, suggesting the visceroptotic type. No abdominal tenderness is manifest, and no tumor mass can be felt.

Laboratory Report.—The *x*-ray examination of the chest is entirely negative.

The sputum examination is negative, the urine normal chemically and microscopically. The blood count shows 5,000,000 red blood cells, hemoglobin 90 per cent; blood Wassermann ++++.

A Graham-Cole test was done for gallbladder diagnosis, and was found to be positive .

Course.—The patient was admitted to St. Mary's Hospital under the care of Dr. L. A. Barney, on June 1, 1927, having had an attack of vomiting and complaining of some pain in the epigastrium, with a reference of the pain into the left chest.

June 6, 1827, a laparotomy was performed by Dr. L. A. Barney, under gas-ether anesthesia. The gallbladder was found to be adherent to the duodenum, and some yellow patches could be seen through the serosa of the gallbladder. The gallbladder and appendix were removed, and the wound closed with drainage.

The pathological report showed an appendix measuring 5 cm. in length and .5 cm. in diameter. The lumen contained some hard fecal material, and the wall was thick and fibrous. The gallbladder measured 4 cm. in length, 2.2 cm. in diameter. The lumen contained a cholesterin stone measuring .3 cm. in length. The mucosa was congested and edematous, and the wall thickened.

A surgical diagnosis was made of cholecystitis and cholelithiasis and chronic appendicitis.

June 7 the patient complained of restlessness, shortness of breath, and she expectorated some mucus. Some bile was also vomited. At short intervals the patient complained of considerable mucus in the throat, and a tendency to choking. An examination was made, and it was observed that the patient had an extreme flatness on the left side of the chest, extending anteriorly upward to the third rib, and posteriorly to the second rib, with an area of hyperresonance above this point. The right side was hyperresonant. The apex of the heart was most markedly audible in the anterior axillary line on the left side. On percussion, tympany was noted from the seventh rib downward. A few fine râles were audible in the left chest posteriorly, but

the breath sounds in the dull area were materially increased and were tracheo-bronchial in character.

An *x*-ray showed the characteristics portrayed in Fig. 3.

A diagnosis of postoperative atelectasis of the lung on the left side was made.

On June 9 the patient coughed up a small quantity of mucus after attempting Sante's maneuver, and showed some improvement, the temperature receding

Fig. 6. Section of atelectatic area. See report of pathologist for detail.

to normal, but rising again toward evening, and continuing at about 100 degrees until June 12.

An *x*-ray on June 10 showed some improvement in the area of dullness on the left side, corresponding to some improvement in the physical signs.

The patient's clinical condition, however, did not improve, the vomiting continued, and the pulmonary signs became acute. There was considerable coughing, expectoration of mucus, and respiratory distress.

Another *x*-ray picture was taken on June 12, and it was observed that the patient had pneumonia on the contralateral, right side.

The patient gradually became worse, and died June 14, 1927.

The autopsy disclosed the following, as reported by Dr. George S. Berdez, pathologist:

Mrs. C. S.: Died at St. Mary's Hospital June 14, 1927, 4:45 p. m.; autopsy at St. Mary's Hospital June 14, 1927, 7:30 p. m.

This is the body of a female, measuring about 170 cm. in length, showing emaciation Grade III.

On the left side of the midline there is a recent operative wound measuring about 18 cm. in length; dry. Upon opening the thoracic cavity the right lung shows a few fibrous adhesions to the thoracic wall, and the cavity contains a small amount of bloody serous fluid. The left pleural cavity contains about 200 c.c. of serous fluid. The lower left lobe is completely col-

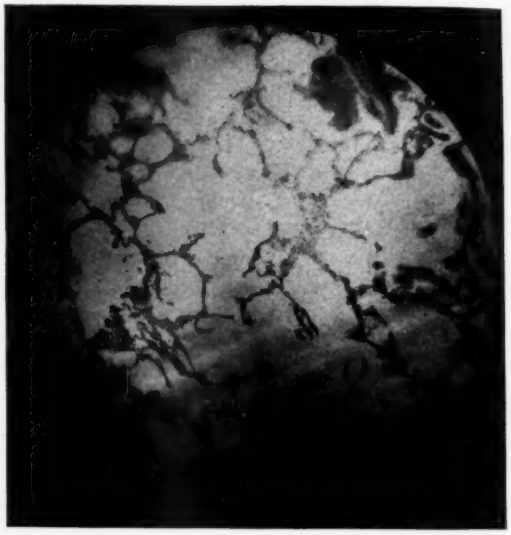

Fig. 7. Section of area of compensatory emphysema in unaffected upper left lobe of lung.

lapsed. The upper lobe is very emphysematous. The heart is displaced very much to the left. The pericardial cavity contains about 20 c.c. of serous clear fluid. The mitral and tricuspidal valves are patent for two fingers. The arterial openings are competent. The myocardium is moderately transparent and brownish. The coronary vessels show only a few small yellowish patches. The aorta shows several irregular whitish patches and in places irregular depressions. The concavity of the arch of the aorta shows an aneurysmal sac about the size of a prune, measuring about 4.5 to 5 cm. in diameter. The sac is filled with compact and adherent thrombotic masses. The aneurysm is quite adherent to the left pneumogastric nerve and mainly with the recurrent laryngeal, which can be dissected out only with the greatest difficulty. The aneurysm, which extends from the posterior part of the concavity of the arch on its descending portion, causes compression of the lower left bronchus and of the left pulmonary artery. The sac is quite adherent to the esophagus and to the left bronchus, which shows a small perforation at a place where the wall is very much thinned. This part of the aneurysmal sac is tightly obliterated by the adherent thrombotic masses. The lower lobe of the left lung contains no air and is completely atelectatic. The bronchi to this lobe

are almost obliterated by much tough purulent mucous material. The upper left lobe shows marked emphysema. The right lung is very much larger than usual, shows a marked edema which in places indicates pneumonic changes. The anterior parts of the right lung are emphysematous. The hilus glands on both sides, mainly on the right side, are very much enlarged.

The spleen is about twice normal size and fibrous. The adrenals are rather small, and contain a moderate amount of lipoid. The right kidney shows a small recent infarct. The left kidney shows two scars of older infarcts. The bladder contains a little cloudy urine. The tubes and ovaries show nothing of note. The uterus contains little blood. The mucosa shows a few mucous cysts. The gallbladder is absent. There are a few recent adhesions around the bed of the gallbladder. The remainder of the peritoneal serosa is smooth and glistening. The common duct is slightly dilated and contains somewhat cloudy bile. The liver is about normal in size, the markings are distinct, the tissue is pale and cloudy. The pancreas shows nothing of note. The stomach contains much gas and some bile-stained mucous material. Some similar material is found in the duodenum and in the small intestine. The appendix is absent and a ligature is found on its stump. A small amount of yellowish exudate is seen around this stump, enclosed in local adhesions. The ligature of the stump is tight. The large intestine contains a little soft fecal material. The mesenteric glands show nothing of note. Lymph glands can be palpated in the occipital and epitrochlear regions. The thyroid is rather small. The vocal cords show a normal symmetric cadaveric position.

Anatomical Diagnosis:

Status after cholecystectomy, appendectomy.
Luetic aortitis.
Aneurysm of the aorta.
Compression of the hilus of the left lung.
Collapse (atelectasis) of the left lower lobe.
Bronchopneumonia of the right lung.
Chronic tumor of the spleen.
Old and recent infarcts of the kidneys.
Multiple lymphadenitis.

Microscopic Examination:

Section No. 1—Lower Lobe of the Left Lung—

The alveoli are almost completely collapsed. The lumen of several alveoli contain desquamated epithelial cells, and the capillaries are in part distended and filled with blood. The bronchi are mostly filled with mucus and pus. Here and there, there are moderate deposits of cell pigment in the connective tissue surrounding the bronchi. The intima of the branches of the pulmonary artery often show irregular thickenings.

Section No. 2—Upper Left Lobe—

The alveoli are very much distended, filled with air. The alveolar septa are thinned, sometimes ruptured. At various places small groups of alveoli are filled with fibrin and p.m.n.'s. Some of the smaller bronchi contain also a small amount of a muco-purulent exudate.

COMMENT

This case report is of interest because of the occurrence of a bronchial obstruction on the left side from compression through an aneurysm in the arch of the aorta, which undoubtedly antedated the operation. Interestingly, the operation induced an attack of massive atelectasis of the lung within forty-eight hours following the operation. To my mind this would indicate that there is a close relationship in the causation

Fig. 8. Photograph of aorta and aneurysm, divided by section, in concavity of aortic arch.

of atelectasis of the lung postoperatively between the influence of bronchial obstruction and respiratory immobilization. It has been contended by some that bronchial obstruction is secondary to the respiratory immobilization, and by others that it is quite independent of it, in inducing collapse, but I believe the sequence

of events in the case reported quite clearly shows the influence of both factors.

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SOLVO ASPIRIN NOT ACCEPTABLE FOR N. N. R.

Solvo Aspirin (Ess & Arch Co., Philadelphia) bears the declaration on the label that "Each teaspoonful contains 5 grains of aspirin in a soluble and convenient form with other suitable ingredients." In the information sent the Council on Pharmacy and Chemistry the following statement of composition was offered: "Solvo Aspirin is a solution containing five grains of ASPIRIN (Acetylsalicylic Acid) to each fluid dram, in a soluble form free from all precipitates, combined with Glycerine, Elixir Aromatic, Distilled Water and Tincture Cudbear." In another communication, the preparation was declared to contain, in addition, two grains of sodium bicarbonate to each teaspoonful. The Council reports that from the information it is evident that the preparation is one in which the attempt is made to make acetylsalicylic acid more soluble by addition of sodium bicarbonate, and this despite the fact that it is well known that, in the presence of water, acetylsalicylic acid reacts with sodium bicarbonate to form sodium acetylsalicylate, which in turn is hydrolyzed to sodium acetate and sodium salicylate. In consonance with this, the A. M. A. Chemical Laboratory reported that, in a specimen submitted to examination, the acetylsalicylic acid was largely, if not completely, decomposed into sodium salicylate and sodium acetate. The Council declared Solvo Aspirin unacceptable for New and Non-official Remedies because it is an unscientific mixture, marketed under a misleading name, with an incorrect statement of composition and with unwarranted claims. (Jour. A. M. A., January 21, 1928, p. 205.)

SOME EFFECTS OF SYNTHALIN

Investigation by Blatherwick and his colleagues at the Santa Barbara Cottage Hospital in California demonstrated that synthalin administered by stomach tube failed to produce hypoglycemia in rabbits. Subcutaneous and intravenous injections usually decreased the blood sugar. Acute nephritis is produced by parenteral administration. There is also injury of the liver, as shown by a decreased ability to deaminize subcutaneously injected glycerine. Certainly caution should be exercised in the use of a drug showing such properties. Blatherwick points out that the hypoglycemia produced by synthalin may be due to a combination of at least two processes. One of these resembles the action of insulin and the other that of hydrazine. The latter substance appears to cause hypoglycemia by injuring the liver and thus preventing normal glyconeogenesis. Synthalin has apparently not yet met the prerequisites for rational use in the relief of diabetes. (Jour. A. M. A., January 21, 1928, p. 209.)

DIPHTHERIA TOXOID (ANATOXINE-RAMON)

This product, as prepared at the serum division of the Pasteur Institute by Dr. Ramon himself, has been successfully employed in immunization against diphtheria in France and other countries. No information is at hand as to the efficacy and safety of commercial preparations of diphtheria toxoid made in this country. The Council on Pharmacy and Chemistry of the American Medical Association has not accepted any of these preparations for inclusion in New and Non-official Remedies. (Jour. A. M. A., January 14, 1928, p. 139.)

CLINICAL CONSIDERATION OF CARDIAC PAIN*

W. H. Long, M.D.
Fargo, N. D.

THERE is hardly a more important task for the physician than the interpretation of precordial pain. The seriousness of overlooking those atypical types of angina pectoris associated with coronary sclerosis and the failure to warn these individuals concerning proper regime is evident. But the consideration of mistaking functional types of distress and neuromuscular chest pain for true angina and thereby possibly engendering a great mental handicap is often overlooked. Of the two types of invalid, the latter with his cardiac neurosis often becomes the more pitiful.

The symptoms of the syndrome known as angina pectoris are so well known that any repetition of them seems useless, yet the description by Heberden is so masterful that it can hardly be omitted. He wrote,

"But there is a disorder of the breast marked with strong and peculiar symptoms, considerable for the kind and danger belonging to it, and not extremely rare, which deserves to be mentioned here at length. The seat of it, and sense of strangling and anxiety with which it is attended may make it not improperly be called Angina Pectoris.

"They who are afflicted with it are seized while walking (more especially if it be uphill, and soon after eating) with a painful and most disagreeable sensation in the breast, which seems as if it would extinguish life if it were to increase or continue; but the moment they stand still all this uneasiness vanishes.

"In all other respects the patients are, at the beginning of the disorder, perfectly well, and in particular have no shortness of breath, from which it is totally different. The pain is sometimes situated in the upper part, sometimes in the middle, sometimes at the bottom of the os sterni, and more often inclined to the left than to the right side. It likewise very frequently extends from the breast to the middle of the arm. The pulse is, at least sometimes, not disturbed by this pain, as I have had opportunity of observing by feeling the pulse during the paroxysm. Males are most liable to this disease, especially such as have passed their fiftieth year. After it has continued for a year or more it will not cease as instantaneously upon standing still, and it will come on not only when the persons are walking, but when they are lying down, especially if they lie on the left side, and oblige them to rise out of their beds. In some inveterate cases, it has been brought on by motion of a horse or a carriage and even by swallowing, coughing, going to stool, speaking or any disturbance of mind."

This classical description, written in 1768, has never been improved upon.

The association of angina pectoris with various pathological pictures has given rise to many interesting controversies. Heberden felt that it was due to a spasmodic condition. Jenner, soon after Heberden's description of the syndrome, associated it with coronary sclerosis. However, cases were soon studied which failed to show at autopsy any demonstrable pathology. It was believed that in these cases spasm of the coronary vessels similar to the attacks of intermittent claudication in the extremities was the cause of the attacks. Albutt was first to attribute practically all cases to aortitis, and felt that the stretching of the outer coats of the aorta in its first portion gave rise to the pain. Mackenzie's explanation, however, seems best applicable to the majority of cases, that is, that the pain is due to an exhaustion of the heart muscle. This explanation nicely accounts for the pain suffered by the young healthy individual, which comes only with extreme physical exertion; and accounts quite as well for the pain of the individual with disease, whether this be impaired circulation from sclerosis diffuse in the aorta, or at the origin of the coronary vessels, or along the course of the coronary vessels, or fibrous change in the myocardium as the result of actual inflammatory disease.

That coronary disease may be held a very common associated pathological finding is well illustrated by Cabot's studies:

In an analysis of 127 cases of coronary sclerosis there were ninety-four without angina and thirty-three with angina. Of eleven cases with angina and without coronary sclerosis four showed sclerosis of the aorta, one syphilitic aortitis and six showed no changes whatever in the aorta.

In an electrocardiographic study of one hundred and fifty-five cases, Willius felt that coronary disease was the most likely factor in 86.5

*Read before the annual meeting of the Northern Minnesota State Medical Association, St. Cloud, Minnesota, Sept. 12 and 13, 1927.

per cent. Lambert's observation that 80 per cent of cases of coronary sclerosis presented attacks of pain and dyspnea is likewise striking. Another important report is that by Willius and Brown of a post-mortem study of eighty-six cases of coronary sclerosis; of these, 26 per cent presented typical symptoms of angina pectoris; in 40 per cent the symptoms were so slight that cardiac disease was not suspected; the degree of sclerosis was much more marked in the former group.

The diagnosis of the typical and more severe cases is always easy. But too often one sees cases with variation from the usual picture, which, for lack of careful consideration of the details of clinical history, go undiagnosed. And let me emphasize that it is upon these details of history and not upon physical signs that the decision is usually based.

Of these atypical cases, a common type is that with pain of typical location but associated only with overeating. These attacks may continue for some time before pain with other types of cardiac overload becomes evident. By careful questioning one can often determine the fact that while they occur after eating they are more prone to occur if the patient is active soon after eating, or that the pain may occasionally be referred to the base of the neck or to the shoulder or to the arm.

Another type often overlooked is that with pain only in the epigastrium; the patients present themselves thinking they have some gastric disorder. Again the history that such distress occurs regularly with exertion and the incidence of perhaps occasional mild attack with substernal or precordial location with characteristic radiation will serve to distinguish them. The fact that these attacks occur only on cold days or are much worse on cold days may be helpful.

Occasionally pain may begin in the hand, in the inner two fingers and ascend the arm, localizing in the breast. Occasionally it may be entirely confined to the arm. I saw one case in which the only pain was localized over the distribution of the great occipital nerve, masquerading for months as neuralgia, but careful history established its absolute association with exertion and therapeutic trial with nitrites abolished it completely. Another type sometimes met with is known as "angina sine dolore"; here the patient has only a marked thoracic oppression with immobility of respiration and anxious facies.

The localization of cardiac pain is along the distribution of the spinal segments corresponding to the origin of the primitive cardiac tube. Since these segments are distributed over a rather wide area extending from the first cervical segment to the eighth dorsal segment, this accounts for the varied location of the referred pain.

Kahn has called attention to a group of symptoms which he designates as prodromal. The more important of these are attacks of sudden weakness associated at times with palpitation, at other times with the feeling that something had dropped in the chest. Other cases presented for a considerable time a burning sensation, substernal or epigastric. Others presented cardiac asthma and dyspnea. These cases were followed for a considerable period and all later developed typical angina pectoris.

Lambert, in a study of cardiac pain last year, described the characteristics of that occurring in coronary endocarditis separately from that seen in Heberden's angina. While this attempt to separate varieties of cardiac pain may be farfetched, his observations are interesting. He says, "The pain is characteristically a sense of fullness and pressure, or an uncomfortable oppression or constricting belt rather than an acute, sharp pain. The pain is usually substernal or precordial. . . . In a few instances the pain remains localized in the shoulder and arm. More than twice as frequent as arm pain is epigastric pain." He describes attacks of respiratory distress which often occur at night in patients who show but little dyspnea on exertion. He stresses the fact that the pain in coronary sclerosis is likely to be accompanied by dyspnea while that in Heberden's angina is not, but rather is attended by an immobility of the chest. By this differentiation he evidently attributes most of the major attacks (Heberden angina) to aortitis.

Other types of precordial pain to be differentiated are those associated with chronic endocardial disease, especially aortic regurgitation and mitral stenosis; pericarditis; intercostal neuritis; root pains; herpes zoster; cardian neuroses, such as effort syndrome; and, finally, acute coronary occlusion.

The pain of mitral stenosis is more likely to be

of the sticking, lancinating type. It is less clearly dependent upon cardiac overload. The pain of aortic regurgitation is more constant like that of aortic aneurysm. The pain of pericarditis is usually localized to the precordial region, and may be localized to a very small area; it is likely to be sticking in type and is more constant than the pain of angina pectoris. All these conditions are likely to be present in younger individuals and their physical signs serve to distinguish them.

Intercostal neuralgia is rare, the pain is paroxysmal and there is tenderness along the nerve trunk. Myalgia of the chest wall is more common. The pain of this condition is likely to take on the characteristics of neuro-muscular pain elsewhere; it is often worse in damp changeable weather; it is frequently localized to a small area; there are often areas of localized tenderness over a muscle attachment or over a rib; it may vary in location from day to day; movements of the chest wall or shoulder girdle are likely to aggravate it; it is likely to be lancinating in type; it is usually associated with definite foci of infection. Kilgore made a rather comprehensive study of 253 patients with chest pain and found that of the thirty-six cases which he considered true angina, pain of lancinating type was found in only four, and of these four, there was only one who did not have pain of dull compression type also, which he considers much more characteristic of true angina.

The pain in cardiac neuroses may more exactly simulate true angina, but the history will reveal many discrepancies, such as the greater incidence of attacks while at rest or the failure of relief of pain by rest. These discrepancies, together with the symptoms and signs of vasomotor and nervous instability, should serve to distinguish them from angina pectoris.

The condition most likely to be confused with the more severe attacks of angina pectoris is acute coronary occlusion. The chief characteristics of this condition are these:

The pain is much more severe than that of angina; it is terrific, often requiring repeated full doses of morphine for relief; nitrites are of no avail. The pain is much more protracted, lasting for hours. The patient is severely shocked, the face ashen or very pale, and covered with cold perspiration. The pulse is small, thready, and rapid. The heart tones are feeble, distant, and of the ill defined fetal type. Dyspnea is universal, and the lungs soon show signs of passive congestion with coarse râles over the bases in the majority of cases. There is a decided fall in blood pressure in practically all cases. Vomiting is frequent and often this and the frequent location of the pains in the epigastrium may cause it to be confused with intra-abdominal disease. Fever soon develops and may react 101 or 102 degrees. A leukocytosis is the rule and may reach as high as 20,000. A pericardial friction rub frequently develops as early as twenty-four to forty-eight hours after the onset.

The comparative frequency of coronary occlusion and angina pectoris is shown in the report of Paul D. White, who observed sixty-two cases of coronary occlusion and two hundred cases of angina pectoris over a period of five years. In the past one and a half years our records show six cases of acute coronary occlusion and thirty-seven cases of angina pectoris.

Following is a brief tabulation of thirty-seven cases of angina pectoris seen from April, 1926, to August, 1927.

Males 30. Females 7.

Age at onset by decades:
- 4th— 4 cases
- 5th—10 "
- 6th—15 "
- 7th— 8 "

Arteriosclerosis, general: Slight—1 case
- Grade 1—12 cases
- Grade 2—13 "
- Grade 3—4 "
- Grade 4—4 "

Hypertension: Present in 19; absent in 15.

Cardiac enlargement:
- Grade 1—12 cases
- Grade 2— 8 "
- Grade 3— 5 "
- Grade 4— 1 case

Nonapparent— 9 cases

Heart tones: good in 10 cases; fair in 12 cases; poor in 13 cases.

Congestive failure: present, 10 cases; absent in 27 cases.

Severity of pain: mild in 16; moderate in 11; severe in 10.

Electrocardiographic tracings showed sufficient abnormality to diagnose myocardial disease in 22 cases. Not sufficient change to diagnose myocardial disease in 13 cases. Not done, 2 cases.

Death has occurred in 7 cases: sudden cardiac deaths 4; from congestive heart failure 1.

Two cases showed at autopsy extensive arteriosclerosis involving coronaries and also aorta.

Theobromine results: 7 good; 5 fair; 5 poor.

During the same period six cases of acute coronary occlusion were encountered and the findings are briefly tabulated.

Average age, sixty.

All males.

Previous angina, present in all; severe in 2; mild in 4.

Leukocytosis varied from 14,400 to 23,000.

Pulmonary congestion in all.

Electrocardiographic finding in 4 showed changes accepted as indicative of that condition.

Death occurred within 3 hours in 2; on sixth day in 1; on ninth day in 1; in sixth week in 1 (sudden death after patient had been about).

Autopsy performed in 2 cases revealed recent complete occlusion of a large branch of the left coronary.

In differentiating the condition from intra-abdominal disease the details of history are most important. It often requires persistent questioning at the height of the attack to get the patient to admit that there is radiation of the pain to neck or shoulder or arm. This radiation is not invariable but should be sought for. The history of previous lesser distress of anginal type is of extreme importance; the frequency with which this history could be obtained varied greatly in various reports, Lambert obtaining it in only 25 per cent of three hundred and twenty-five fatal cases, while White reports its presence in thirty-two of sixty-two cases.

The prognosis of angina pectoris is always difficult and must depend upon the closest appraisal of all available data. This data should comprise: the nervous stability of the patient; the age of the patient; the severity of the pain; the amount of effort required to induce the pain; the presence or absence of generalized arteriosclerosis; the blood pressure; the size of the heart; the character of the heart tones; the presence of signs of concomitant heart failure; and the results of electrocardiographic study. The cases with few signs of cardiac damage and little elevation of blood pressure offer a better outlook. Also, those persons who have a low threshold for pain and are obviously of a high-strung, nervous type, can be given a better prognosis. In any case, sudden death is possible.

The average duration of life after the onset of symptoms in White's series was 4.2 years. In Mackenzie's series of 213 cases, the average duration of life was 5.4 years after the onset of symptoms; of these, 23 lived less than one year, 97 from one to five years, 58 from five to ten years, 24 from ten to fifteen years, and 11 more than fifteen years. Willius' cases showed a 47 per cent mortality during a five year period. In another series of cases studied by Willius sudden death occurred in 83 per cent.

The treatment of angina pectoris is largely the regulation of the life of the individual within the limits of his myocardial tolerance. He must avoid all strain, physical and mental, which brings on his attacks. A period of bed rest will often give enough improvement of the myocardium to permit previously badly handicapped patients to lead fairly active and useful lives for long periods. The diet must be restricted, overeating avoided, and protein foods taken in moderation. Extra hours of sleep and frequent short vacations are important to lessen nervous irritability.

Focal infections should be eradicated, especially in the cases with but little evident myocardial damage. This procedure often results in a surprising degree of amelioration, and besides, it is of prime importance in the prevention of further myocardial damage.

The continued use of theobromine in five grain doses, or of euphallin, has been effectual in lessening the incidence and severity of the attacks in a number of cases. In cases with syphilis, anti-luetic treatment should be carefully carried out.

The treatment of the attacks should be first by nitrites, one hundredth of a grain of nitroglycerine, dissolved under the tongue and repeated every one-half to one hour as necessary, or by amyl nitrite by inhalation. These failing, morphine is indicated.

In conclusion I would emphasize that the diagnosis of angina pectoris must depend on the details of clinical history, the physical findings being often entirely negative. The prognosis depends upon a complete appraisal of the cardiovascular mechanism, and in a large degree upon the coöperation of the patient. The treatment is largely the institution of a proper individual régime.

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THE DANGERS OF ULTRA-VIOLET RAYS

Not only do barber shops swindle prospective victims of baldness with incandescent lamps colored purple, not only do electrical corporations sell, as ultra-violet ray devices, contraptions delivering hardly any ultra-violet radiation at all, but some manufacturers of apparatus actually delivering ultra-violet rays of potency endeavor to place these devices wherever a sale can possibly be made. Regardless of the fact that practically every method in medicine that may do good can also do harm, these machines are being sold to bath institutes, swimming pools, massage parlors, beauty parlors, clubs, barber shops and innumerable other businesses in which medical supervision is certainly not probable, indeed, hardly possible. The sales are made notwithstanding the fact that scientific literature has already revealed that the rays may in some instances be potent for harm. (Jour. A. M., January 14, 1928, p. 120.)

NOBRO

This is another phenobarbital (luminal) mixture sold as a cure for epilepsy. It is put out by the Nobro Medic Co., Worthington, Ohio, and sold on the mail-order plan. The individual behind this concern seems to be one Harry M. Freck, whose claim to medical knowledge appears to be based on the fact that he once operated the Freck Garment Company, and at present conducts the Freck Stenographic Bureau and an advertising circular-letter business. He has been connected with other "patent" medicines. Nobro comes in the form of pink capsules. The "course" consists of ninety capsules sold for four dollars. The A. M. A. Chemical Laboratory analyzed Nobro and reports that each capsule contains essentially 0.0414 Gm. (approximately 3/5 grain) of phenobarbital to which has been added lactose. (Jour. A. M. A., January 7, 1929, p. 49.)

TOPHIRIN TABLETS NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that "Tophirin Tablets" (Bram Chemical Co., Philadelphia) is stated to contain in each tablet: "Acid Phenyl Cinchoninic (cinchophen) Gr. 3½; Magnesium Salicylate Gr. 3½; Colchicine, Alkaloid Gr. 1/400," but that no quantitative statement appears on the package or in the advertising. In the administration of cinchophen, the salicylates, and colchicum it is essential that these drugs be given in amounts suited to the individual case and patient. There is no evidence showing that the combined use of these drugs is of advantage. It is thoroughly irrational to administer cinchophen, magnesium salicylate and colchicine in fixed proportion. The Council found "Tophirin Tablets" unacceptable for New and Non-official Remedies because it is an irrational mixture offered to the profession without declaration of its quantitative composition and under a name which does not declare the potent ingredients but is therapeutically suggestive, and because it is sold with unwarranted claims and in a way which will lead to its ill-advised use by the public. (Jour. A. M. A., January 28, 1928, p. 293.)

GOLDEN GLINT

If we are to believe the advertising material that comes with the trade package, Golden Glint (J. W. Kobi Co., Seattle, Washington) "is a specialist's preparation for harmlessly beautifying the hair." There is also a "Golden Glint Shampoo." From an examination made in the A. M. A. Chemical Laboratory it appears that Golden Glint is essentially a mixture of aniline dyes, such as methyl violet (used in indelible pencils) and Bismarck brown, with excipients. (Jour. A. M. A., December 10, 1927, p. 2059.)

THE PAINFUL SHOULDER*

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THE pathological causes which produce pain in the shoulder are varied and can be ascribed to injury, infection, nerve involvement and new growths. The resulting conditions are also extremely numerous and present the symptoms more or less characteristic of the lesion in question.

The conditions which produce painful shoulder are:

A. Trauma
   1. To the acromio clavicular joint..... { dislocation. / fracture. / arthritic changes.
   2. Fracture of the scapula.
   3. Dislocation of the shoulder.
   4. Fracture of the humerus—head, neck and tuberosities.
   5. Synovitis and arthritis of the shoulder joint.
   6. Injury of the supra-spinatus tendon, of the long head of the biceps, of the attachment of the latissimus, of the teres major. Sprain of the rhomboideus minor.
   7. Injury to the brachial plexus.
   8. Subdeltoid and other bursa—periarthritis.

B. Infection:
   1. Infection of the component bones of the shoulder joint.
   2. Infection of the shoulder and acromioclavicular joints.
   3. Infection of the bursæ about the shoulder joint.
   4. Infection of the tendon sheath of the long head of the biceps.
   5. Extension of infection from the soft parts about the shoulder joint.
   6. Infection in the supra-spinatus tendon.

C. Cervicobrachial neuritis.

D. New growths.

To discuss the symptomatology and diagnosis of all the above would carry us too far afield.

In the diagnosis of any given shoulder condition nothing is of more value than a satisfactory *x*-ray picture both for its negative evidence and for such positive bone, joint or other lesion which it may show.

It is my purpose to call to your attention a group of cases variously classified as periarthritis (Duplay), subdeltoid bursitis and subacromial bursitis; and pathological conditions in the supra-spinatus tendon.

The essential feature of all of the above for which the patient seeks relief is a stiff and painful shoulder. The onset may be very sudden (acute) or very gradual (chronic) and the onset of the pain and the disability will be sudden and severe, or gradual and dull and aching in character, with many gradations of severity in the varying types.

Etiology.—The history given by the patient may give trauma either definite in his own mind or relatively clear as the exciting cause. Brickner considers that the compression of the bursa and of the supra-spinatus tendon, between the greater tuberosity of the humerus and the acromial process, to be the most common cause. Codman considers the lesion most commonly a tearing of the fibres of the supra-spinatus tendon, more or less complete and due to trauma.

Certainly in many of the cases some history of over-exertion, especially in abduction or hyperabduction of the arm, is given. In many cases there is no obtainable history of trauma, but some history of a preceding infection, tonsillar, dental, gonorrheal, coryzal, or otherwise, in which after ordinary use the shoulder disability occurs.

Recently in women there has been a constant query—"I drive my closed car with the window open on my left side, can it be the cause of my trouble?" and the lesion invariably is in the left arm. The coincidence if nothing else is striking.

In other cases Brickner mentions some undetermined metabolic process which causes these sub-bursal lime deposits in the tendon.

Pathology.—The lesion most commonly found is an adhesive subdeltoid bursitis, most marked in the region of the greater tuberosity. These

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adhesions may be and usually are localized to portions of the bursa, and the remainder of the bursa is free. The bursa may contain organized pieces of fibrin similar to those found in the chronic inflammations in joints. There may be a villous hypertrophy with papillary outgrowths usually from the wall next the bone. Occasionally the bursa may be separated into locules with a serous effusion in one or more of these pockets, as has occurred in Brickner's cases.

Tuberculous infection is very rare. In the only case I have seen the focus originated in the greater tuberosity, that is, it was a tuberculous osteomyelitis and involved the subdeltoid bursa secondarily.

In another group the lesion most easily demonstrable is a deposit of lime and other material chiefly in the supra-spinatus tendon, rarely in the infra-spinatus tendon. This deposit is considered by Codman, Brickner and others to be due to an injury to the tendon with hemorrhagic infiltration of the tendon, then necrosis of the tendon and the subsequent infiltration by the mineral salts. To this condition Moschowitz has given the name tendonitis. The deposit is in the tendon and in the periosteal attachment of the tendon to the periosteum and beneath the floor of the bursa.

Until recently all the cultures in my cases have been sterile but in three recent cases with pronounced acute clinical phenomena, organisms have been grown from the involved tendon, in two a hemolytic streptococcus and in one a hemolytic staphylococcus aureus. In two of the cases the possible original source of the infection was demonstrable. In one, a doctor, an infected tooth yielded a streptococcus similar to that recovered from the shoulder, and in the other, a woman, there was an infection of the cervix uteri, probably gonorrheal in origin, although the only recoverable organism by culture was a hemolytic staphylococcus aureus. In both, the original infections were treated after the shoulder had yielded the positive culture. Both were very acute cases with persistent symptoms and perhaps the early operations for relief explains the recovery of the organisms. In the third case there was a residual infection in the antrum following a cold, but no definite information as to the infecting organism could be obtained and the culture from the nose was too indefinite to fasten upon it as the source of the infection.

The histopathology of the tendon varies with the lesion. Codman describes an actual tear in the tendon with hemorrhage, etc. None of my cases showed such a lesion and in none was there any blood pigment. In the acute cases there was a mass of necrotic detritus surrounded by tendon cells in various stages of necrosis, which gave a blue reaction with hematoxylin as described by Moschowitz. In these cases there was some polynuclear infiltration, most marked in the three cases in which organisms were obtained on culture, with round cell infiltration, but in none were these infiltrations particularly marked. As Moschowitz pointed out, there was none of the ordinary reactive tissue such as is found in the ordinary inflammations in soft tissues in the involved tendons. Between the tendon bundles, in the older cases, there is densely organized connective tissue which surrounds calcareous material. (For a more extensive review of the histopathology, Moschowitz's article should be read.)

Symptoms.—Pain is constant. In the acute cases this is agonizing and completely disabling, and the pain and the disability are out of proportion to the lesion found. The pain is not localized but is given as in the shoulder and worse over the deltoid regions. It may radiate down the arm and as far as the fingers. In the chronic cases it is dull aching in character with intermittent exacerbations especially after use of the arm.

Disability is also constant. In the acute cases this is complete and the patient will permit no abduction of the arm. In the chronic cases the disability is variable but abduction is always limited and painful. External and internal rotation are both limited, especially the latter.

Examination.—There is atrophy of the deltoid and suprascapular region with flattening of the shoulder and prominence of the head of the humerus. Points of tenderness are occasionally present and when pressure over the greater tuberosity gives acute pain it is significant. The other tender points are too variable to be of value. Dawbarn's sign has not been of value in my experience, because it has been impossible to abduct the arm sufficiently to cause the tender point to disappear beneath the acromion.

Diagnosis.—A satisfactory *x*-ray picture of both shoulders with the humerus in the same position, is of the greatest importance. If a deposit is shown in the region of the greater tuberosity the diagnosis can readily be arrived at; if negative it does not exclude inflammation in the bursa. The *x*-ray also gives valuable evidence of other lesions.

Treatment.—For purposes of treatment one must separate these cases with their many variations into various groups. Brickner gives the types as acute, hyperacute, chronic, chronic with exacerbations. Personally, I prefer to separate them into: (1) Those with deposits in the tendon as shown by the *x*-ray. (2) Those with no deposits.

In the cases with deposits in the tendon we have the acute cases with severe pain, rapid atrophy of the deltoid and complete disability. For these complete rest, preferably in bed, a sedative, morphine, if necessary, and hot moist applications locally, give the most relief. As a rule the acute symptoms subside in from three to seven days. In my experience dry heat, diathermy and massage increase the pain without benefiting the patient otherwise and are not indicated. Operation may be indicated (vide infra).

In a large majority of cases the acute symptoms subside and recovery is gradual aided by heat, massage and exercises and the gradual abduction method suggested by Brickner. In some the pain becomes of the chronic type.

In the chronic cases with deposits, abduction, massage and exercises usually give relief. When recurring attacks occur, especially with increase in the deposit in the tendon, operation is indicated and possible sources of infection should be carefully sought.

Operation.—Opinions as to operation vary. In my experience operation gives relief more quickly than any other form of therapy, especially in the acute cases with a large deposit. Just when to operate is a question, but the relief obtained after the release of the broken down material by operation and the rapid return of function is striking.

In the chronic cases with repeated exacerbations operation seems much more certain to give relief than the more conservative methods.

Technic.—Split the fibres of the deltoid muscle on a line from the acromic clavicular joint downward, separating the fibres of the muscle by sharp dissection. Open the bursa and explore it, treating such changes as are found there. In the region of the supra spinatus tendon beneath the floor of the bursa there is usually a yellowish deposit which is removed by cutting through the posterior wall of the bursa and completely excising the involved area. If the tendon is torn it can be sutured. Defects in the tendon may be closed by suture although this is not essential. The floor of the bursa is then closed. The soft structures are closed in layers without drainage and the patient put to bed with the arm abducted alongside of the head. Early motion is indicated with abduction, exercises and later Indian clubs. An electric pad over the shoulder gives some relief after operation.

In the chronic cases with no deposits but with complete loss of shoulder motion, manipulation under anesthesia is advised. Adhesions can be felt to break during this procedure. Manipulation is continued until the passive motions of the shoulder are normal. This is followed by abduction, heat and exercises.

In the less severe cases, when anesthesia is undesirable, gradual abduction as suggested by Brickner should be used. Massage, guided active movements and then exercises are valuable. The electric pad worn for hours has been as satisfactory, in my hands, as diathermy, dry heat and other forms of heat.

In the acute cases manipulation is contraindicated. Rest usually in bed and moist heat with a sedative, if necessary, give more relief than any other procedure. When the acute symptoms subside the gradual abduction, etc., mentioned above should be used.

Medication.—Except for morphine and codeine very few drugs help. Occasionally atophan, cinchophen, tolysin given in seven and one-half grain doses every four hours gives some relief.

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DIVERTICULITIS

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BY the term diverticulum we mean a circumscribed dilatation of a part of the wall of any hollow viscus. Diverticulosis means the presence of diverticula, usually not giving symptoms, and the seat of no other pathology. Diverticulitis is a condition in which there is an inflammation of a diverticulum, and usually means that the condition is located in the lower third of the large intestine.

OCCURRENCE

From the older statistics, this would appear to be a rather unusual lesion. The first case reported was found at an autopsy in 1710. Virchow in 1853 wrote of the disease. Klebs, in 1869, first called attention to the relationship of the formation of diverticula to the vessels in the intestinal wall. In 1898 Graser confirmed the above by work done upon twenty-three portions of healthy intestines, and reported that he found, on microscopic examination, a more or less typical diverticulosis in the region of the pelvic colon; there were no naked eye findings; there were a few cases showing a venous congestion without inflammation. In the reports of autopsies done upon twenty-eight subjects, he found, on microscopic examination, ten with diverticula. In forty autopsies Zudeck found fifteen with diverticula. DeMounges by naked eye examination of the intestines of 100 autopsied old people found thirty with diverticula. Judd, writing in 1924, states: "In the clinic during the last year, a third of the positive *x*-ray examinations made of the colon disclosed diverticula or diverticulosis." Spriggs, in 1,000 consecutive cases in which an *x*-ray examination of the intestinal tract was made, found 10 per cent with some state of diverticulosis. In 8,132 autopsies in Dresden, diverticula were found in sixty-four. In 2,600 autopsies at Johns Hopkins Hospital, nineteen were found with diverticula. In the thirty cases autopsied by Drummond, no decompensated hearts were found, and in only a few was a condition of venous engorgement found.

ETIOLOGY

Diverticula are either congenital, as a Meckel's variety, or acquired. The pulsion diverticulum is the usual type found, and occurs most often in the lower third of the large intestine. Hedinger has described a diverticulosis in a newborn child. The muscle defects and vessel holes are the weak points of the intestine. Where, with the above, the increased intra-intestinal pressure from gases, or hardened feces, is added, we have ample reason for the development of diverticula. Particularly when the large intestine contracts during peristalsis, the pressure is increased, and a weakened point will develop and increase, just as a Zenker type of esophageal diverticulum is aggravated by the increased pressure exerted on a weak point of the esophageal wall during deglutition.

Keith feels that diverticula are evanginations of the mucosa through the muscle coat at weak points in the intestinal wall, caused by the increased intra-intestinal pressure. He has demonstrated a contraction of the tenia in the segment of the intestine where diverticula occur. This condition is not always found. The increased pressure within the intestine is not the most important factor in the development of diverticula, as in obstructions from any cause the intestine above the stenosis is usually found to be normal. Judd states: "The inherent weakness combined with the pressure of feces and gases in the intestine is undoubtedly responsible for the condition." The traction type of diverticulosis rarely is found in the intestine. It did not occur in any of our cases. It is unusual for diverticulosis to be discovered or to develop before the fortieth year. The average age is between 45 and 55. In our series the average age was 57+ years. It is said that one hardly need consider the presence of diverticulosis in any individual under the age of 45, but Ashurst reports finding diverticulosis in a child of seven. Hausemann could not produce diverticulosis experimentally in the intestines of young people. He was able, however, to produce a similar condition in the intestines of older people.

Diverticulosis is found most often in obese males. In Mayo's forty-two cases, the heaviest

patient weighed 220 pounds, the lightest 120. Some observers find diverticulosis commonly in thin individuals; our people were all obese. Constipation is the rule. There may be periods of diarrhea, with mucus and blood in the stool.

PATHOLOGY

Diverticulosis is a primary condition, and will be progressive. It may be found in any part of the gastro-intestinal tract, from the esophagus to the rectum, including the appendix. The descending colon is the usual location. They may be single or multiple; as many as 400 have been found in the intestine of one individual. In all of our cases the sacs were multiple. They are very often found in rows on either side of the bowel wall, close to the mesocolic band, very often involving the appendices. When this condition is present, the sac points toward the mesocolic band. In some cases the entire wall has been involved.

Early, the sac wall may have the normal intestinal coverings; later only the mucosa and serosa may be present. The mucosa may be atrophic and still the wall may be found to be an inch in thickness, particularly in cases of peridiverticulosis. Torsion of the sac may occur. The sacs vary in shape from a microscopic point to a sac the size of a lemon. Should inflammation or new growths be added, the size may be much larger. The sac is most often shaped like a flask, the neck near the intestine being narrowed. Inflammation is prone to occur as the feces tend to become dried out and hard, and irritate the sac wall. The swelling accompanying the infection narrows the neck of the sac and makes an imperfect drainage. Once the inflammation is present, it may subside after the acute stage and reappear at variable intervals, following an acute respiratory infection, as in two of our cases, or go on to a chronic stage, with greater swelling, gangrene, and perforation, resulting in a local or general peritonitis, abscess, or fistulous formation. During the acute or chronic period, with or without a demonstrable involvement of the mucous membrane, the infectious process may involve the serosa over and near the sac, and spread to the mesentery. This is called a peridiverticulitis. The increasing inflammatory disease may lead to a tumor formation or constrict the lumen of the intestine. Perforation of one or more diverticula may occur as in the Telling series (28.4 per cent). A general peritonitis will follow should no adhesions wall off the perforated area. Should adhesions occur, a local abscess will follow. Fifield found twenty-one of his cases with abscess formation, and only twelve cases with general peritonitis. Often a number of abscesses may result; these may coalesce, burrow through the different coats of the intestine, into the vagina, anus, or externally. Should this occur, a cure might result in case no fistulæ followed. A metastatic infection may localize in any part of the body, but usually occurs in the liver. In Telling's series, fistulæ occurred in 19.8 per cent of the cases. They may be sigmoido-vesicle, recto-vesicle, sigmoido-uterine, anal, and external. The sigmoido-vesicle fistula is the commonest found, especially when a tumor mass is present near the urinary bladder. These masses were formerly all thought to be malignant. In one of our cases, a sigmoido-cutaneous fistula appeared postoperatively. Adhesions are found frequently attached to the small intestine, urinary bladder, parietes, and pelvic organs. Adhesions to the small intestine may constrict the intestine, causing an obstruction.

The association of carcinoma of the intestine with diverticulitis is a very important study and one in which there is some uncertainty. It is the same interesting association occurring in other parts of the body: the stomach, kidney, lungs, and appendix. As Dr. William Mayo writes, "The only known fact of importance in the etiology of carcinoma is its relations to chronic irritation. The term pre-cancerous is used to denote certain cell changes taking place in the area of chronic irritation, which, if found in connection with invasion of the tissues, would be typical of carcinoma." It should be realized that by the chronic irritation of an inflamed sac by hardened feces, in the presence of an increased blood supply, the changes spoken of by Dr. Mayo might be produced. However, this condition has not been produced experimentally.

A review of the opinions of the various authors is interesting. In McGrath's twenty-seven cases, carcinoma was found in seven. In Dr. William Mayo's forty-two cases, carcinoma was found in thirteen. In Telling's 105 cases, carcinoma was found in one, and he records find-

ing eleven other cases. In our series, carcinoma did not occur. Judd, in 118 cases, did not find carcinoma, but during the same period he found nineteen cases of diverticulosis associated with carcinoma. He states, "It is probable that a patient with diverticulosis is no more likely to develop malignancy of the colon than one without it." Drummond, in thirty cases, does not mention carcinoma. Erdmann feels that carcinoma is "coincidental and not the result of disease." Giffin found that for every case of diverticulosis resected, seven carcinomas were resected. Fifield in 218 autopsies and fifty clinical cases, makes no record of finding carcinoma. Mandl, in reporting 1,500 cases of carcinoma of the lower colon and rectum, does not mention diverticulosis. Ewing, quoting Mya, Lowenstein, Keible, and Stieda, states that none of the disturbed developmental conditions of the intestine seem to be directly connected with tumors, that is, carcinoma.

Carcinoma occurring so infrequently in association with diverticulosis makes one wonder whether or not the association is not one of coincidence. The fact that both conditions have a predilection for the lower half of the colon makes the idea of coincidence more probable, a similar relative relationship existing as between peptic ulcer and carcinoma of the stomach.

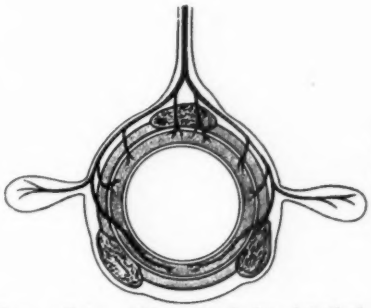

Fig. 1. Entry of blood vessels into intestinal wall. (From H. Drummond, Brit. Med. Jour.)

Fig. 2. Beginning diverticulosis. (From H. Drummond, Brit. Med. Jour.)

SYMPTOMS

A diverticulum may occur and give no symptoms until infection, the sequelæ of infection, or new growths appear. This is confirmed by the frequency with which diverticula are found at autopsy, and by the fact that 40 per cent of Telling's 105 cases had no symptoms, and in Judd's 615 cases only 137 had symptoms sufficient to warrant surgery. All of our cases presented symptoms at one time or another. The classification of Dr. William Mayo is excellent and is as follows:

"Group 1. Self limiting diverticulitis or peridiverticulitis."

This is the commonest group, found in middle aged, obese males, who give a history of constipation with attacks of colicky pain, appearing suddenly and localized deep in the left lower quadrant of the abdomen. The pain lasts from a few hours to several days. This is usually associated with tenderness which is localized in the left lower quadrant of the abdomen. A constant fever, as high as 104°, chills, or chilly feeling, may be present, with or without vomiting. The white blood count in our cases ran from twenty to thirty thousand. The records show that these attacks had persisted from seven days to twelve years. The average duration is two years. In our cases, the attacks have been present for two and a half years, the pains lasting for one or two days, followed by a tenderness or soreness of from two to five days. Constipation has been the rule. Blood was found in the stool in only one of our cases. Most of our cases fall into this group. The attacks in two were preceded by acute upper respiratory infections. The pain, tenderness, fever, white blood counts, were as described above. The proctoscopic examination was negative. The fluoroscopic examination showed the sacs. The early

plates showed the sacs, and later dark shadows typical of diverticulosis. In two of our cases it was impossible to make an early diagnosis by *x*-ray, due probably to the sacs being filled and a poor drainage. It is usually best to make an

Fig. 3. Openings of diverticulum into bowel lumen. (From H. Drummond, Brit. Med. Jour.)

x-ray examination between the attacks unless the symptoms are severe or continue for days.

"Group 2. Diverticulitis and peri-diverticulitis, with formation of abscess resulting in entero-vesicle, entero-cutaneous, or other fistulæ."

None of our cases has been in this group. Telling found that 19.8 per cent of his cases were in this group. The history is the same as in Group 1, except that the symptoms are more prolonged and severe. A tumor may appear and disappear. Should the fistulæ connect with the urinary bladder, the patient will complain of bladder frequency and irritation, and the urine will contain pus and fecal material. The sigmoido-vesicle is the usual type; fistulæ may connect with the cutaneous tissues, the sinus discharging pus and fecal material. The same will occur should the fistula connect with the vagina.

"Group 3: The obstructive type."

In acute diverticulitis and peri-diverticulitis the obstruction is the result of infection and edema. In the obstruction type it is due to hyperplasia, adhesions, and angulation. This is most often found in the descending colon. The symptoms are more severe and prolonged than in Groups 1 and 2. In one of our cases, Mrs. D., an obese female, aged 54, complained of recurrent attacks of left lower quadrant distress, with fever, tenderness, increasing constipation, and abdominal distension; suddenly a severe constant pain appeared in the left lower quadrant of the abdomen. She was in shock and could not pass flatus. On examination, a tumor mass was found which was thought to be a maligancy. She was operated upon for the obstruction and a colostomy was done. The surgeon still felt that he was dealing with a malignancy. Her condition improved. She did not lose weight. Her blood remained normal. The stools did not contain blood. The proctoscopic examination was negative. The *x*-ray examination did not suggest the presence of a malignancy. Later, a resection of five to six inches of gut was done, and on microscopic examination no carcinoma and only a peri-diverticulosis was found. She recovered. In our second case, an obstruction appeared suddenly, followed by a perforation and peritonitis. The man was operated upon and a resection done. He had had attacks for years. Between the attacks there were no symptoms whatever.

"Group 4. Carcinoma associated with diverticulosis."

This did not occur in any of our cases, and has been discussed.

DIAGNOSIS

Diverticulosis will be discovered by a routine examination when no symptoms exist. When an individual, particularly an obese male, complains of attacks of pain, with tenderness in the left lower quadrant of the abdomen, fever and constipation, the general examination except the abdomen is found to be negative, the proctoscopic examination is negative, and the *x*-ray is positive, a diagnosis may be made. However, with the above history, a partial obstruction, the presence of a mass, a normal proctoscopic examination, and an *x*-ray examination pointing to a stenosis of the gut that suggests a benign condition, it may require a microscopic examination to determine the true condition, as in one of our cases. The stool is usually a constipated type, dried and hard. The caliber is smaller than normal, and a small amount of mucus may be found. Pus cells may be present when a fistula or ulcer exists. The proctoscopic examination is of value to show whether or not the mucosa is intact. We have not seen a diverticulosis by proctoscopic examina-

tion. The *x*-ray is of great diagnostic value. The screen examination will show the sacs, which later remain as dark shadows in rows near the bowel lumen after the bowel has been emptied.

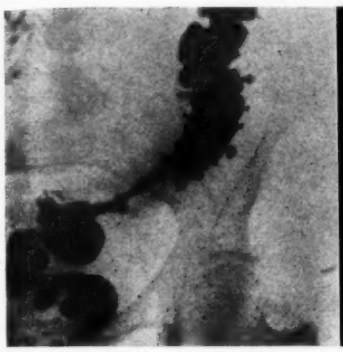

Fig. 4. Diverticulosis with obstruction.

Fig. 5. Diverticulosis obstruction—24 hours after enema.

Fig. 6. Spasm from appendix, not diverticulosis.

A stenosis and fistula may be demonstrated. A cystoscopic examination may be helpful should a sigmoido-vesicle fistula be present.

Carcinoma must be differentiated. The early mucosa involvement may be demonstrated by the *x*-ray and proctoscope. The stool usually will contain red or white blood cells with mucus. The general blood examination may show an anemia. There may be no other symptoms, as in the case of Mrs. P., who complained of a heaviness localized in the middle of the abdomen. It was constant. A small diverticulum was demonstrated one time by screen examination, never to be found on second examination. Her stools were negative. Repeated *x*-ray examinations were negative. She was operated upon, and a primary lymph gland sarcoma was found in the mesentery which had extended to the bowel.

DIFFERENTIAL DIAGNOSIS

Neoplasms, carcinoma or sarcoma, tuberculosis, chronic appendicitis, parasitic diarrheas, chronic ulcerative colitis, syphilis, pelvic disease in women, foreign bodies, and vesicle tumors must be differentiated.

TREATMENT

The treatment depends upon the findings. In Group 1, the patient is first seen during an attack; the treatment is aimed at relieving the acute symptoms. The patient is put to bed, a tepid sponge given, he is encouraged to drink fluids, and is given a diet of puréed vegetables, cooked fruits, coarse bread and butter, cooked cereals, soft puddings, cocoa, meat, eggs, milk, cheese, and gelatine. Locally one ounce of a 1 per cent aqueous solution of mercurochrome is injected into the rectum, to be retained as long as possible. Heat is applied externally. In our hands, the acute attacks gradually subsided, the fever reaching a normal point in twenty-four to forty-eight hours. The pain disappeared usually within twenty-four hours, and the tenderness within two to four days. We advise that the daily mercurochrome injection be continued for two or three times after the last symptoms have subsided. The patient remains in bed at least two days and gradually resumes his usual routine. Should an acute upper respiratory infection be present, this infection is treated in the usual manner. Between the acute attacks, constipation should be avoided by regular habits, proper diet, with a sufficient quantity of vegetables, fruits, etc., and exercise. He should be taught to regulate the diet so that the stool is of soft consistency and a cylindrical shape. The obesity should be reduced by diet, exercise, and a gland extract when necessary. By the above regime, we have carried patients along for several years, comfortable, happy, and having few attacks, and without surgery.

The remaining conditions of groups are surgical. Should a malignancy be suspected, immediate surgery should be insisted upon.

We must bear in mind that this is a serious condition, carrying a mortality of from 12 to 25 per cent. The fact that diverticula are multiple and may be extensive makes surgery difficult.

In our series of 12 cases, there were four women and eight men. The average age was 57+ years, the average weight 177 pounds. Four of the series have needed surgery, two because of obstruction due to peri-diverticulitis and angulation, one because of a perforation, one because of increasing symptoms, in which an exploratory was made and a sarcoma of the mesentery was found. Carcinoma in association with diverticulitis did not occur. There has been no mortality.

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CLINICAL SIGNS AND TREATMENT IN DIABETIC ACIDOSIS*

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DURING the past four or five years, representing the period since Insulin has been generally available, I have accumulated a series of 20 cases of severe diabetic acidosis and coma, which represent the basis for this discussion. These cases were seen in part in private practice and in part in the Diabetic Clinic at the Minneapolis General Hospital.

It is generally agreed that one of the unfortunate tendencies of modern medicine is toward the replacement of clinical observation and study by laboratory methods. With this in mind in this brief discussion it seems well to stress again the clinical signs and symptoms incident to diabetic acidosis and for the most part laboratory procedures will be disregarded.

The first clinical sign of diabetic acidosis to which I wish to call attention is the acetone odor which is almost always very easily detected on the breath of the patient. This peculiar odor should always be looked for and while not inherently diagnostic, should warn one of the possibility in practically every case. However, it is strongest in the most severe cases and in early cases may escape detection.

The next clinical sign which can easily be noted in every case is the peculiar type of respiration associated with this condition. This may best be described as a marked increase in the depth of respiration and also, though not as marked, an increase in frequency of respiration. There is no cyanosis present. This peculiar type of dyspnea or hyperpnea is typical of this condition alone and is always present.

Another clinical sign to which I do not believe enough attention has been directed is that of decreased intra-ocular tension. This is always marked in the comatose cases and is very easily detected by the palpating finger in only a moment. I have watched carefully in every case for this manifestation and have on at least two occasions been saved from ignominious error by its absence. A case in point is that of a girl, aged 19, who was found in bed in a comatose condition. The urine was obtained by catheter and large amount of sugar found to be present. The specimen had been discarded without any test for aceto-acetic acid. The only history obtainable was that the previous day the patient had had a severe shock due to the accidental death of her brother and had vomited several times during the afternoon and evening. I was asked to see her at 4 a. m. by the surgeon who had been called in attendance and to direct her insulin regime. On examination the outstanding facts were that the tongue and mucous membrane of the mouth were normally moist and that the eyeball tension was normal on palpation. While examining her the nurse came in to give 40 units of Insulin which had been previously ordered. Fortunately there had been a delay. Careful physical examination showed an evidence of septic abortion with a cerebral thrombosis. Blood sugar when available several hours later was found to be .09 per cent. This patient could very easily have been killed through a hypoglycemic reaction had the large dose of Insulin been given. Had it not been for the absence of these, to me, two cardinal signs I would surely have been in error.

Another case was that of a mild diabetic of many years standing, who was found unconscious, and here again the normal eyeball tension and moist mucous membranes alone made one suspicious of a vascular accident. Autopsy showed a cerebral thrombosis. Where a known diabetic is found unconscious it is very easy to jump to the conclusion that diabetic coma has occurred, but the high-grade arterial degeneration is becoming much more frequent as a cause of death.

The dryness and desiccation of the tongue and mucous membrane of the mouth are not peculiar to diabetic acidosis alone but will always be found in this condition. Their absence should cause one to check up carefully for other causes for unconsciousness.

Other frequent clinical manifestations include a peculiar facial expression of anxiety. The face is frequently flushed, especially the fore-

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head. The mental condition frequently is sluggish and the patient may give the appearance of lassitude. These latter manifestations are also seen in moderate hypoglycemic reactions.

Vomiting and abdominal pain have been concomitant factors in many of these cases. The vomiting shows nothing characteristic but the pain has been found to be chiefly localized in the upper abdomen and is similar to that occasionally seen in severe toxemias of pregnancy.

While this discussion is limited to clinical signs I wish to digress for one point from the laboratory, namely leukocytosis. An increase in the number of white blood cells has been present in every case in this series in which blood counts were available. This increase has ranged from 13,000 to 22,000. It has always returned to normal with the clinical recovery and no definite cause has ever been ascertained in many cases. This leukocytosis when combined with abdominal pain and vomiting is most disquieting to one's peace of mind unless the patient has fortunately had a previous appendectomy. In only one case in this series has a surgical diagnosis been made and this was with many misgivings; but exploratory laparatomy, fortunately for the diagnostician, revealed an acute gangrenous appendix.

This laboratory finding is mentioned in this clinical discussion largely because I have not seen much prominence given to it in the literature and to call attention to its constant presence in these cases.

Of all the clinical signs, those which have impressed me as the most important are: the changed respiration, the decreased ocular tension, and the dry tongue and mucous membranes. They have been constantly present in all of these cases and together with the finding of glycosuria and aceto-acetic acid they make the diagnosis in every case.

While further laboratory studies such as alveolar carbon dioxide and the combining power of blood plasma are indeed useful, their chief aid is in checking the progress of the patient's condition.

One cannot help but feel that far too often the diagnosis of diabetic acidosis in its earlier stages is being overlooked and in its later stages made largely upon blood chemical findings when closer and more careful observation would give the desired information.

TREATMENT

In this series there are sixteen cases representing twenty attacks of severe acidosis or coma, this condition having occurred twice in four cases. No case has died of diabetic acidosis although apoplexy, meningitis, and pneumonia have each caused one death. Death, however, occurred after the patient was sugar-free and after acid bodies had disappeared from the urine, so that I feel we may fairly claim a recovery from the diabetic condition.

The regime of treatment may be divided into two divisions: (1) The general management; (2) insulin administration.

The general management of these cases has been along the precepts laid down by Dr. Joslin many years ago: Reassurance; warmth; gastric lavage if vomiting exists; tap water or normal saline enema; forcing fluids; and digitalis.

Cathartics have not been given in any of these cases as they are felt to be contraindicated.

Fluids have been given both by mouth where possible and by proctoclysis but in the great majority also by hypodermoclysis. The addition of 1/16 per cent nococain to the solution has made this much less disagreeable for the patient and in practically every case two liters have been given and repeated in eight to twelve hours until the patient was able to take fluids by mouth in reasonable volume.

Digitalis has usually been given as digifolin hypodermically and kept up until the patient was apparently out of danger.

Insulin.—The amount of insulin and period of dosage naturally have varied greatly with the severity of the condition. As small an amount as 50 units has been used and in one case over 300 units were given during the first twenty-four hours.

Where acidosis is not present in large amounts and vomiting has not yet occurred, it has been our practice to use a moderation of the regime first suggested by Dr. Woodyatt. This might be called a four hour regime. The patient is asked to void and then given 240 c.c. of milk. Ten to twenty units of insulin are given at the same time. Fluids are given by mouth to the limit of the patient's ability and at the end of four hours all the urine is saved and quantitatively tested for sugar. Another similar period is then started, the insulin being increased or decreased as indicated by the urinalysis. This is

kept up for successive periods until the patient is sugar-free, when the periods are increased to six hours as in the Woodyatt regime and the amount of milk increased to 400 c.c. Knowing the amount of insulin necessary for the six hour period it is easy to calculate the amount necessary for twenty-four hours and the patient is put on three feedings, six hours apart, each preceded by the appropriate dose of insulin, *i.e.*, one-third of the total dose of insulin.

The first night a specimen of urine is tested at midnight and if sugar is found an additional small dose of insulin is given at this time. It has been our practice to test the urine at midnight until it has been sugar-free two consecutive nights.

In the more severe cases, insulin is usually given at first intravenously, the initial dose usually being 30 units. This has sometimes been partially buffered by glucose but more often without. The insulin dosage has then been repeated every two hours until the glucose disappeared. Following this the interval has been increased between doses and milk or orange juice given with insulin as soon as the stomach will tolerate such food. Following this the patient is put on a four to six hour regime as described above. In only one case has it been necessary to give glucose intravenously to buffer the insulin after the patient became aglycosuric.

Too much stress cannot be laid upon the fact that the management of severe acidosis or coma is a practically continuous procedure for the first twenty-four to forty-eight hours. The patient must be seen frequently and his insulin dosage be graduated as the condition changes. Fluids must be forced and both insulin and fluids must be kept up after the patient becomes sugar-free. The four and six hour regime which I have detailed has been most useful and I have yet to see an uncomplicated case retrogress where it has been conscientiously followed.

ERUSTICATOR

The A. M. A. Chemical Laboratory reports on the composition of a poisonous rust remover. A physician had reported the death of a baby, who died ten minutes after biting into a tube of "Erusticator." The product is put out by the Sterling Products Company of Easton, Pa. It was not labeled "Poison." Analysis showed that the preparation was essentially an aqueous solution of a mixture of ammonium and hydrogen fluorides (generally designated as ammonium bifluoride) equivalent to 36.3 per cent ammonium fluoride, and 16.9 per cent hydrogen fluoride. The sale of such poison without fair warning to the consuming public is to be deprecated. (Jour. A. M. A., January 21, 1928, p. 205.)

DESICCATED PARATHYROID GLAND PREPARATIONS OMITTED FROM N. N. R.

The general article Parathyroid Gland, in New and Non-official Remedies, 1927, states that there is no conclusive evidence for the oral use of parathyroid gland preparations. In 1926 the Council decided to omit all such preparations with the close of 1927 unless in the meantime evidence should develop to show that they were effective. No such evidence has developed. On the contrary, evidence in the opposite direction has become available. Accordingly, the Council directed the omission of all the accepted brands of desiccated parathyroid gland from New and Non-official Remedies. (Jour. A. M. A., January 14, 1928, p. 117.)

NEURO-SYPHILIS—SOME PERSONAL OBSERVATIONS*

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DURING recent months a good deal has been written about the treatment of general paresis with tertian malaria, and about the use of tryparsamide instead of the former classical treatment in syphilis of the central nervous system. But very little has been said about the handling of cerebro-spinal syphilis in those cases where for one reason or another the usual forms of treatment cannot be employed. Every medical practitioner who undertakes the treatment of cerebro-spinal syphilis knows that he meets a certain number of cases in which the routine methods of treatment cannot be used because of toxic reactions of one kind or another, or because of definite intolerance to spinal therapy, which certain individuals possess. Having recently met an unusually large number of such cases, it seems that a brief discussion of this phase of the treatment of neuro-syphilis is worth while.

From the standpoint of pathology, syphilis of the nervous system divides itself into two large groups. The first of these is the so-called interstitial or diffuse type, in which the lesion is inflammatory and not degenerative, and is confined to the blood vessels and meninges. The second of these two types is the so-called parenchymatous type, in which the lesion is degenerative as well as inflammatory and in which there is structural change in the tissues of the brain and cord themselves. In the first group, we find the early cases, which are considered curable. In the second group are tabes dorsalis, general paresis and tabo-paresis, which are incurable. Except in well defined and advanced cases of tabes or paresis, the differentiation between the first and second groups cannot be made by means of clinical symptoms alone, but must be verified by spinal fluid examination. The correct interpretation of the colloidal gold curve often determines not only the treatment but the prognosis in these cases.

The question frequently arises as to how soon after the initial lesion, symptoms of neuro-syphilis may appear. An average length of time would probably be from five to ten years. That is, that five to ten years after the initial lesion the symptoms of neuro-syphilis attract the individual's attention enough to induce him to consult a physician. Exceptions occur, however, and the writer can recall a case in which a very acute cerebro-spinal syphilis came on three months after the initial sore. In any event it is inexcusable not to have a spinal fluid examination in every case where there is a definite syphilitic history or a history of promiscuous sex indulgence, regardless of the time which has elapsed, providing suspicious symptoms exist. In many early cases where actual reflex changes have not yet appeared and where physical and neurological examinations are negative, a diagnosis of neuro-syphilis can be made by the finding of a positive spinal fluid, and as the success of the treatment varies directly with the earliness of the diagnosis, the importance of early spinal fluid examination is obvious.

For the past fifteen years, the method of choice in treating this disease has been the use of combined intravenous and intraspinous therapy. Since Ehrlich's discovery of "606," the intravenous use of arsenic in one form or another has been in the best of repute. An intravenous injection of neosalvarsan, followed in a few moments by a drainage of the spinal canal, has been the chosen method in the interstitial or diffuse cases. These treatments are repeated at intervals of a week for a period varying from eight to fifteen weeks, according to the tolerance of the individual being treated. The Swift Ellis treatment, which consists of the intraspinous injection of an autogenous salvarsanized serum, has been recognized as the best form of therapy for the parenchymatous types. These intraspinous serum injections are repeated at intervals of two weeks over a period of two to six months, as determined in each case by the reactions of the patient. There have been many variations of the above-mentioned treatments devised for individual cases, but in the main these two kinds

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of therapy have been employed universally. Useful adjuncts to these forms of treatments have been the uses of mercury and iodides.

It is not the intention here to discuss or to criticise the above mentioned methods of treatment. We still use them and believe them to be the most effective forms of treatment for the greater percentage of cases. In addition to them, is the more recent use of tryparsamide, which has proven very effective in the treatment of general paresis. There are, however, certain persons needing treatment for neuro-syphilis who cannot tolerate any arsenic preparation because of an idiosyncrasy. This shows itself, usually, at the second or third injection in the form of a dermatitis, a severe gastric reaction with pain, vomiting and diarrhea or by an attack of actual syncope occurring during or immediately after the intravenous injection. The evidences of an idiosyncrasy to arsenic are positive warnings of danger and must be heeded. Less often than the preceding are those individuals who react very severely to the intraspinous medication or who cannot stand repeated spinal drainages. Persistent headaches, vertigo, nausea and loss in weight to a marked degree in persons under treatment, together with an abnormal dread of the treatments, are among the most important exhibitions on the part of the patient which necessitate discontinuance of spinal therapy.

In these cases where arsphenamine is contraindicated, because of its adverse reactions, or where persistent spinal therapy cannot be carried out, it has been our experience that the best substitute is the use of bismuth. During the past few months we have met several well defined cases of neuro-syphilis of the parenchymatous type, which for one of the above reasons could not tolerate the regular treatment. These persons were therefore treated with bismuth, with the most gratifying results. In fact, it may be said that the results obtained were equal in success to those obained in similar cases with the use of the arsphenamines. In reviewing recent literature concerning the use of bismuth in the treatment of syphilis, the consensus of opinion seems to be that, while bismuth is not to be considered a substitute for arsenic, it has proven itself invaluable in the cases in which there is intolerance to arsenic and has produced amazing results when used in late cases. By late cases, of course, are meant tertiary cases, which includes neuro-syphilis. The value of bismuth in early syphilis, that is in the primary and secondary stages, seems to be somewhat problematical, according to recent publications.* The value of bismuth in place of mercury, to be used in the combined treatment with the arsphenamines, is also considered somewhat doubtful. Its therapeutic value in cases of neurosyphilis which have been persistently treated with arsenic, unsuccessfully or with relapses, has been found to be most satisfactory.*

As far as our own experience is concerned, we have found it to be more satisfactory than mercury when used in combination with the arsphenamines, because it is much less painful than mercury and because it requires less skill to administer and avoid the painful after-effects; but our chief satisfaction in its use has been in the cases where the usual forms of treatment could not be given because of the patient's intolerance. It is not necessary to devote valuable space and time to the description in detail of the individual cases, but a brief mention of three typical cases, as illustrations, will suffice. These three cases were all tabes—two women under thirty-five years of age and one a man of over sixty years of age. They were all well developed cases; one of the women was bed-ridden, with complete loss of the use of her lower limbs and complete loss of bladder and rectal control. She had to be catheterized regularly twice every twenty-four hours and her suffering with the lightning pains was very acute at times. The other woman was not bed-ridden but was very ataxic in her gait and could not get around on her feet without assistance. She also had considerable disturbance with the bladder control and frequently wet herself. The old gentleman was ambulatory and not at all ataxic, but he had absent knee-jerks and an optic neuritis so severe that his vision was very poor. In each of these three cases, the neo-arsphenamine and spinal treatments were tried. This had to be stopped in the first mentioned case, because of a very severe gastro-enteric reaction; in the second case because of a dermatitis which showed itself after the second intravenous injection of arsphenamine; and in the third case, that of the old gentleman, because of an attack of syncope which came on immediately following the second

*Brit. Med. Jour., July 20, 1927, p. 172.

injection and in which he nearly died. No one of the three cases had been treated at all before reaching our hands.

Following the very positive intolerance which was shown to the regular form of treatment, each of these cases was put on bismuth. It was given in the form of bismuth salicylate, two grains at a dose, as a deep injection in the muscles of the hip. It was repeated twice a week for a rather indefinite period of time, close watch being kept for evidences of toxicity. In no cases which we have treated with bismuth, have we ever seen any evidences of either toxic reactions or idiosyncrasy. After eight or ten weeks of this treatment, during which time no other form of therapy was used, the bismuth injections were stopped and intravenous injections of sodium iodide given three times a week, thirty-one grains at a dose. This was kept up until the saturation point was reached, when the bismuth injections were again resumed. The sodium iodide and the bismuth are not used concurrently because of the incompatibility which exists between the two. Each of the above mentioned cases has received several courses of this kind of treatment, with results which have been eminently satisfactory. The young woman first mentioned, who was bed-ridden and had complete loss of bladder and rectal control, has improved to a point where she is walking about with the use of a cane and when I last saw her in my office she could walk some without the cane. She has also regained her bladder and rectal control in full and her shooting pains no longer bother her. She has also gained materially in weight and strength. The second young woman, who was markedly ataxic and had some loss of bladder control, has regained the latter in full and has much better use of her lower limbs. In the case of the gentleman with the optic neuritis, this has subsided definitely, as shown by eyeground examination and by the improvement in his vision. His general physical condition is also definitely improved.

Further discussion of bismuth used as an adjunct to arsphenamine and also of its use during the rest period between the courses of regular intravenous and intraspinous medication, must be cut short by lack of time and space. It is sufficient to say that it is so used and that it is found to be very satisfactory. The technic of administration is similar to that of mercury. It is prepared in small ampoules, put up in oil which requires heating over a flame to liquefy it. It is then drawn up into a 2 c.c. syringe and injected deep into the hip muscles with a long needle of fairly large gauge, similar to that used in giving the salicylate of mercury. These injections are given twice a week, till at least sixteen have been given. After sixteen have been given, if there are no toxic signs, they may be continued or stopped for a time, as the case seems to warrant.

The effect of bismuth in producing serological changes in the blood or spinal fluid in cases of syphilis is not yet determined. Even the most successfully treated cases of neuro-syphilis (from the clinical standpoint) do not always show marked serological improvement. It is now universally recognized among neurologists that in these cases the clinical improvement is much more important than the serological. In early cerebro-spinal syphilis, a complete return to normal of the spinal fluid following treatment is frequently seen. In the later cases, such as tabes and paresis, this is not the case. Wile and Keim of the University of Michigan medical school (Jour. Am. Med. Assn., October 24, 1925, p. 1269) offer an analysis of one thousand cases treated and observed by them and conclude therefrom that the element of the spinal fluid which is most responsive to treatment and return to normal is the lymphocytosis, and the least responsive one the Wassermann reaction. They find that the colloidal gold curve may be reduced to normal in some of the early cases, but rarely in the later ones, and that the chances for reduction to normal of the increased globulin are second to those of reduction in the lymphocytes.

In any event, our prognosis for the future in all of these cases of neuro-syphilis which have been successfully treated is based more upon the clinical picture than upon the serological findings. The maintenance of a good physical and mental condition and keeping well from a clinical standpoint are more important than seeking negative serological findings. The mere existence of a positive Wassermann reaction in the spinal fluid is not considered evidence that further treatment is needed, in cases where sufficient treatment has been given to bring about a satisfactory clinical improvement or recovery. However, a return to positive of a spinal fluid

which has been rendered negative under treatment, or the gradual increase in lymphocytes after having been reduced to normal under treatment, would be construed as forecasting a lighting up of the old luetic process and would indicate that treatment should be resumed. As long as a patient feels well and shows no physical evidences of a relapse, treatment may be suspended with the understanding that he will report once in six months for examination or return any time that he feels any of his former distressing symptoms beginning; and finally, most important of all, the success of treatment in all of these cases depends chiefly on one thing—namely continuous and persistent treatment, with observation of the patient at regular intervals for at least five years.

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CEREBRO-SPINAL VASCULAR LESIONS IN THE AGED*

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CLINICAL syndromes in the aged, dependent on vascular lesions of the central nervous system are frequent occurrences in every day practice. From the simpler functional disturbance as anemia, hyperemia or hypertension to the more severe conditions of apoplexy, aneurysm or generalized softening with its attendant intellectual deterioration, the physician is dealing with a condition largely dependent on the health of the body as a whole, yet whose immediate pathology lies entirely within the nervous system.

The brain receives its supply of arterial blood chiefly from four main vessels, two vertebral and two internal carotid arteries. The union of these four arteries forms a plexus at the base of the brain known as the circle of Willis, from which branches are distributed to both hemispheres. The two vertebral arteries supply the pons, medulla, cerebellum, and to some extent the hemispheres by means of the posterior cerebral arteries. From the circle of Willis branches arise which penetrate deeply into the substance of the brain, supplying such structures as the internal capsule and the basal ganglia, while other branches lie much more superficial, spreading themselves over the surface and sending large numbers of tiny branches into the cortex. To a slight extent there is some overlapping of these two sets of vessels, but there is apparently no real anastomosis between them.

The venous return of blood is taken care of by many small veins which run outward, forming a plexus on the surface of the brain. These, in turn, form larger vessels which empty into the venous sinuses. The venous sinuses are drained principally by the two internal jugular veins, although a small amount may return by means of the veins of the orbit and those of the diploe.

Cerebral circulation is dependent on the same conditions which control circulation in the rest of the body. The brain is a pulsating organ, dilating with each heart beat, and its volume is also influenced by respiration. A rise in blood pressure causing a general arterial hyperemia results in a general hyperemia of the brain, and the venous pressure, in turn, varies directly with venous congestion elsewhere in the body.

Cerebral hyperemia, under normal conditions, has only a physiological effect such as an increase in mental activity and a feeling of well being. However, if a pathological condition exists, such as tumor, uremia or hemorrhage, resulting in an increase in intracranial pressure, severe headache, impairment of respiration and disturbances of consciousness may result.

Cerebral anemia may be produced by a diminution of arterial supply or by the presence of venous congestion. Hemorrhage, cardiac weakness or the rapid lowering of an intra-abdominal pressure, with the resultant gravitation of blood to that area may bring about a lower supply of cerebral arterial blood. Venous congestion, in itself, unless present in a severe degree, probably gives origin to no symptoms.

The most common vascular lesion of the aged is that which produces a hemiplegia and to which we ordinarily refer as a stroke of apoplexy. The term apoplexy, however, should not necessarily imply a hemiplegic state, but should signify an acute vascular lesion in any portion of the brain, the symptomatology of which will necessarily depend on its location. Hemiplegia in itself is only a symptom and does not at all signify the causative factor which, if due to a vascular lesion, may be thrombosis, embolism, hemorrhage or a simple degenerative process. In the acute stages, it may be impossible to determine whether the process is thrombotic, embolic or due to hemorrhage. However, there are usually some features present concerning the onset, subsequent course, and other physical findings which indicate the nature of the condition. In addition to actual involvement of the vessel walls, the condition of the blood pressure plays a very important part in the etiology of this condition. The presence of a hypertension adds greatly to the frequency of these accidents. Severe hemorrhage, with its attendant shock, may

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produce a lowering of the blood pressure, so that the examining physician may be deceived as to the condition of the general circulation if the patient is seen for the first time during this stage.

The onset of cerebral hemorrhage is sudden, the patient falling unconscious while engaged in his ordinary duties, or while under considerable increased emotional excitement which tends to raise the blood pressure beyond the restraining limits of the diseased vessel walls. The accident may result in death, or, as is the case in the majority of incidents, may produce a profound unconscious state. This state presents a rather typical picture: breathing is slow and stertorous, the skin is wet with sweat and the face somewhat cyanosed. Pupillary reactions are sluggish and the eyelids partly open. Rectal and vesical sphincters are relaxed and the limbs lie flaccid.

The comatose state may last for hours or days, death often resulting without any evidence of the patient returning to consciousness. In the cases in which recovery is to take place, the depth of the coma is gradually lessened, the patient signifying his return to consciousness by evidences of restlessness and by displaying resentment and irritability toward the examiner and those who are attending him.

Not all cerebral hemorrhages, however, result in unconsciousness of any significance, as the loss of blood may be only to such an extent as to produce mild symptoms such as attacks of dizziness or momentary loss of consciousness with mild paralysis. The weakness of the limbs may last only for a few hours to a few days, clearing up entirely or passing over into a more complete hemiplegia, the result of additional hemorrhage.

Cerebral embolism also has an abrupt onset and may produce a picture very similar to that of hemorrhage. If the amount of brain tissue involved is slight, consciousness may not be lost, while a hemiplegia may still develop.

Cerebral thrombosis may have an abrupt or insidious onset. Those that come on suddenly are very difficult to differentiate from hemorrhage. Thrombosis, however, usually results in a very gradual onset of the hemiplegia. A very common occurrence is that of the patient upon awakening in the morning discovering that he is unable to stand. This symptom may be present without any other signs. The patient may be forewarned as to the onset of the thrombosis by experiencing pain or paresthesia in the limbs and frequently difficulty in speech.

Characteristic of a hemiplegia due to a lesion in the motor cortex or where it is more commonly found, in the internal capsule, is the fact that certain parts of the affected side escape paralysis and that those movements of a more highly specialized nature are affected to a greater degree than those which are automatic in origin. Deglutition, mastication, phonation and articulation, which have bilateral enervation, are affected only to a slight extent. In the face one may notice very little asymmetry during ordinary emotional movements. Voluntary movements, such as forced closing of the eyes, bring out the weakness on the affected side. Characteristic of upper motor neuron paralysis of the face is the fact that the forehead and eyebrows escape paralysis, due to the fact that they have cortical representation in both hemispheres. The highly specialized movements of the limbs are paralyzed to such an extent that they stand out in marked contrast to the little involvement of the automatic movements of the neck and trunk, as well as to those areas which have bilateral enervation.

The paralysis in the early stages is a flaccid one. The arm is usually more affected than the leg, the finer movements of the fingers being more affected than those of the shoulder, wrist or elbow.

Following the stage of flaccidity, a condition of increased muscle tone is assumed; the limb assumes a posture which, in the case of the arm, is a position of abduction and internal rotation of the shoulder, flexion and pronation of the elbow, and flexion of the wrist and fingers. The foot on the affected side assumes a position of equino-varus with the leg in extension. The deep reflexes in the paralyzed limbs are greatly increased and clonus may be elicited. The superficial reflexes, such as the abdominal and cremasteric, are greatly diminished or abolished and elicitation of the plantar reflex results in extension of the great toe. In the early stages of an ordinary hemiplegia there may be various degrees of hemi-anesthesia. As a rule this tends soon to disappear but may persist and may be even more troublesome than the muscular weakness.

All hemiplegic states do not confine themselves entirely to one side of the body, but, depending

upon the site of the lesion, we may have a partial hemiplegia or double hemiplegia. For example, a lesion of the mid-brain may present paralysis of the third nerve on one side associated with paralysis of the extremities and face on the opposite side. A lesion in the pons, usually due to a hemorrhage or thrombosis of one of the branches of the basilar artery, may produce a crossed hemiplegia with the face affected on one side and the hand and leg on the other. Certain lesions at the site of the decussation of the pyramidal tract may produce a paralysis of the upper extremity on one side, and of the lower extremity on the other. Again, bilateral lesions in the internal capsules or a single large lesion where the two pyramidal tracts are in close approximation, may produce a double hemiplegia, giving us the clinical picture commonly known as pseudo-bulbar palsy. In this condition, those functions which ordinarily escape paralysis, due to the bilateral enervation, are affected, producing difficulty in speech and swallowing.

Another interesting clinical entity is that which results from thrombosis of the posterior inferior cerebellar artery. This is characterized by paralysis of the soft palate and vocal cords, and conjugate deviation of the eyes on the same side as the lesion. There is a loss of coördinating control of muscle movement and swaying and lateral motion to the side of the lesion with the loss of all forms of sensation over the face on the same side and a corresponding decrease or loss of pain and temperature sensibility on the trunk and extremities opposite to the lesion. These symptoms are explainable on the fact that the vessel in question supplies the peripheral zone of the medulla in which both the superficial and deep sensory tracts are found and the nuclei of the seventh, ninth and tenth, and the vestibular portion of the eighth cranial nerves.

From an etiological standpoint, thrombosis and hemorrhage are largely due to the presence of arterial disease. Thrombosis of a cerebral vessel practically never results except from embolism or from a diseased vessel wall. Acute arteritis and subsequent thrombosis is very rare in the aged, usually occurring in acute specific fevers such as scarlet fever, diphtheria and other infectious diseases such as are usually escaped by elderly individuals. Syphilis is the most prevalent cause of subacute arteritis, the gummatous changes in the arterial walls often leading to thrombosis. Chronic arteritis or atheromatous vessel changes are the most common etiological factors in the production of thrombosis, especially when it is accompanied by an increase in the coagulability of the blood or by a lowering of the blood pressure. Thrombosis occurring between twenty and forty years of age is nearly always the result of gummatous arteritis; in the young, the result of infection; while beyond fifty years of age, atheromatous changes are the most common cause. Gummatous and atheromatous changes have a predilection for the middle cerebral artery. This is true to such an extent that one of its branches, the lenticulo-striate artery, has been called the artery of cerebral hemorrhage.

Cerebral embolism is not especially attendant on old age; more commonly it occurs in young adults who are suffering from heart disease. An embolus, by lodging at an arterial bifurcation, results in slowing up of the circulation and the formation of a thrombus.

Cerebral hemorrhage is almost always due to the rupture of an artery. Venous bleeding is rare and is based on injury to a vessel. However, Hassin[1] has recently reported a case of ruptured cerebral aneurysm in which remote secondary hemorrhages were found. It is his belief that secondary hemorrhages were due to a rapid fall of the arterial tension, resulting in an extensive hyperemia of the capillaries and rupture of the venules. Because of the importance of changes in the vessel wall, hemorrhage is rare under forty years of age and becomes increasingly common thereafter.

Pathologically, thrombosis or embolism in any portion of the brain results in softening of that area supplied by the occluded vessel. In the early stages the involved area is swollen by serous exudation. The convolutions are enlarged and flattened. Within a few days after the accident, the central parts of the involved area have a cheesy to creamy milk consistency, and the zone immediately around this area appears pink, due to the escape of capillary blood into the surrounding tissue. Following this stage, the softened area shrinks, the convolutions become friable, disintegrated, and tear with difficulty from the meninges. If shrinkage does not take place, the surface of the convolutions is found hard and pitted. Other areas may undergo complete degeneration with subsequent forma-

tion of cystic cavities containing clear or slightly turbid fluid.

Hemorrhage occurs much more commonly within the substance of the brain than on its surface. The amount of extrasavated blood may vary considerably. Large hemorrhages deep in the substance of the brain may break through to the surface or push their way inward and rupture into the ventricles. The loss of function in cases of very small hemorrhages is due to pressure and edema, rather than to actual destruction of the nervous elements. In the early stages, the hemorrhagic area is represented by a red clot which is easily separated from the brain substance. Later on the clots shrink and there is evidence of degeneration of the brain around the area. Degeneration goes on to completion and scar tissue or a cystic cavity remains.

Cerebral aneurysm is a rather rare occurrence. Although found in young individuals where it is due to developmental abnormalities or infection, it is more commonly found in the aged, the result of arteriosclerotic or atheromatous degeneration of the media with subsequent weakening of the wall and bulging. Parker[2] has pointed out that syphilis probably plays only a small part in the formation of intracranial aneurysm, because the pathological change is usually that of an obliterative endarteritis and instead of dilatation of the vessel there is thrombosis and stoppage of the circulation.

The symptoms of aneurysm depend first upon its size, second its location, and thirdly whether or not there has been leakage or rupture. Small aneurysms and even larger ones in certain locations are often found at necropsy, having given no symptoms during life. Others, though small, may be so situated as to press against one or more of the cranial nerves, thus producing paralysis or irritative phenomena. In addition to focal signs, evidences of generalized increased intracranial pressure such as choked disc, headache and vomiting may be present, leading to a diagnosis of tumor and operative interference. The diagnosis of an unruptured aneurysm during life is a very difficult one to make. In the presence of focal signs pointing to areas adjacent to the larger vessels or their branches, and evidence of vascular disease or abnormalities in other portions of the body, the presence of an aneurysm may be suspected but an exact diagnosis is impossible. Those that rupture invariably cause death and are discovered by the pathologist. In the cases in which leakage occurs with hemorrhagic spinal fluid and signs of meningeal irritation, a more exact diagnosis may be made, especially if there is a history of previous accident of a like nature.

A very important group, because of their relative frequency, are those cases in which outstanding accidental features are lacking, but whose findings are based on generalized vascular disease producing irritative and slowly degenerative lesions with a gradual loss of function. The symptoms in these cases can be partly ascribed to cerebral arteriosclerosis and partly to vascular changes within the spinal cord.

The most common complaint of this group of patients is that of vertigo. The next frequent complaint is that of tinnitus, while many of these patients display a gradual impairment of hearing. In analyzing 1,026 cases, Stein[3] found that in a large majority of arteriosclerotic patients, ear conditions overshadow pathological conditions elsewhere. Headache, or, as many patients describe it, pain in the head, is a common symptom. Approximately 30 per cent of these cases will present pupillary changes characteristic of senility. Arcus senilis is present and the pupils are small and sluggish. Opthalmoscopic examination in many cases will reveal evidence of retinal arteriosclerosis. This condition is characterized by a narrowing of the arteries and a dilatation of the veins. The calibre of the arteries is irregular, due to the patchy thickening of the intima. The veins may show constriction where they are crossed by the rigid arteries. The arteries present a so-called silver wire appearance due to an increased luminosity of the light streak. There seems to be some variance of opinion in the literature at the present time as to the value of retinal arteriosclerosis as an indicator of cerebro-vascular disease. However, the majority of investigators still believe that retinal arteriosclerosis is a good index of the condition of the cerebral vessels. Knapp[4] believes that considerable changes in the retinal vessels are indicative of a like change in the cerebral vessels, but that the reverse is not necessarily true. Moore[5] reports a series of sixty-six patients in which he found that 44 per cent developed conditions due to cerebro-vascular accident, such as hemorrhage or thrombosis, within a period of seven years following the time when evidence of considerable

change in the retinal vessels was first discovered. Burch[6] states that when several signs of arteriosclerosis of the retinal vessels are present and considered with other physical findings, they contribute information valuable in both diagnosis and prognosis.

Epileptiform attacks occur in about 10 per cent of these patients. These may last over many years and are not necessarily of bad prognostic significance as regards life. They are usually general in nature and only occasionally of the Jacksonian type.

A considerable number of these cases will show evidence of intellectual deterioration, presenting a loss of memory for recent events, with gradual impairment of attention and comprehension. Emotionalism, evidenced by periods of depression, excitability or euphoria, is a not infrequent occurrence. Many of these patients develop a definite psychosis classed and diagnosed variously as presenile psychosis, arteriosclerotic insanity, senile dementia and other descriptive terms of a like nature.

The mental changes in this group are characterized by impairment of attention and comprehension, resulting in faulty impressions and memory failure for events which have happened since the onset of the disease. Their judgment becomes impaired and they are unable to carry on their work as formerly. As the condition progresses, they often become careless in their habits, the amnesia becomes more marked and their mental horizon narrow. Delusions of persecution and infidelity may be developed, and visual and auditory hallucinations are often found. Along with the mental picture various physical symptoms develop. The gait is tottering, there is a tremor of the hands, incontinence, ataxia, and various degrees of paralysis.

Disturbance of function due to vascular changes in the spinal cord are quite common. Too little importance has been ascribed to this condition which is seen frequently enough in the aged to make it necessary that it should be carefully considered in dealing with a spinal cord syndrome. Hemorrhage, thrombosis and embolism may occur in spinal cord vessels acutely; but the findings are usually due to a gradual degeneration of the nervous elements associated with slowly developing vessel change.

The most frequent symptom in this group of patients is that of gait disturbances. The gait is more frequently ataxic than spastic, but a combined spastic and ataxic gait is often found. A hesitating or stammering gait is a very common finding. The gait disturbance in many of these patients may be due to vertigo, or to a combination of vertigo and spinal cord changes or to spinal cord changes alone. Paresthesias of the hands and feet and pain in the extremities, sometimes lightning-like in character, may have their origin in spinal arteriosclerosis.

Vesical and rectal disturbances are common occurrences. The reflexes may be markedly increased with clonus or may be diminished or absent, depending on the extent and location of the damaged area. Impairment of superficial and deep sensibility may be present as well as extreme muscular weakness. Many of these cases are erroneously diagnosed as tabes dorsalis, tumor of the cord, combined column disease and various other spinal cord conditions.

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PROGRESS IN THE PREVENTION AND TREATMENT OF SOME INFECTIOUS DISEASES*

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INTEREST in preventive medicine has taken such a firm hold on the medical profession and the laity that nearly every community is now taking steps toward the stamping out of infectious disease. Newer developments in this field have in a measure at least been responsible for so widespread an interest. It is the purpose of this paper to summarize briefly the practical value and application of some of the procedures which have been introduced for the prevention, diagnosis and treatment of these diseases.

DIPHTHERIA

The benefits of diphtheria antitoxin are too well known to require discussion. Certain adjuncts in the treatment of diphtheria and its complications have, however, been of interest. Serious cardiac complications occurring in the course of the disease have been treated with some degree of success. The therapeutic effectiveness of digitalis, adrenalin and pituitary extract in animals have been shown by Edmunds and Cooper to be greatly augumented by the intravenous administration of hypertonic glucose solution. The practical value of this procedure combined with the usual measures instituted in these cases in our experience has proved the truth of many of their statements.

In the treatment of laryngeal diphtheria there are two measures which have been of particular interest to the authors, namely, the use of laryngeal suction and intraperitoneal administration of antitoxin. Suction was introduced as a method of removing laryngeal membrane. This is carried out by the use of a laryngoscope through which a plain semi-soft or metal catheter is introduced, the distal portion of which is attached to a suction machine. Over a two year period the incidence of intubation was reduced approximately to one-half by this method, which is comparatively simple after reasonable practice with the laryngoscope has been experienced. The accompanying figures illustrate diagrammatically how the procedure is carried out.

Intraperitoneal use of antitoxin has proved of value in selected cases of diphtheria. Tests carried out by one of us to determine the rapidity of absorption of antitoxin by various routes showed this method to be second only to the intravenous and that sufficient antitoxin was found to be present in the blood one hour after intraperitoneal injection to neutralize all the circulating toxin in the very worst case of diphtheria. The simplicity of technic and avoidance of sudden general reactions associated with dyspnea makes the method of particular choice in the more advanced forms of laryngeal diphtheria.

Prophylaxis—Schick test and toxin antitoxin.—The reliability of the Schick test as an indicator of immunity is now definitely established and from observations extending over a number of years has determined the following facts:

1. That most new-born infants have an immunity which diminishes after six to nine months.
2. Most children from this age up to school age have little or no immunity.
3. About one-third of the school children in the larger cities and two-thirds of those in rural communities have enough immunity for protection.
4. About four-fifths of the adult urban population have an appreciable amount of immunity, whereas only about one-half of those in rural communities have this.
5. The antitoxic immunity following an attack of diphtheria depends entirely upon the individual responsiveness to the toxic stimulus. Many develop no immunity or at best only a transitory immunity and for this reason Schick tests should be done from two to three months after an attack.

Toxin Antitoxin.—The preparation of diphtheria toxin slightly under-neutralized by antitoxin from horse or goat has been most widely used in this country, particularly Park's formula 0.1 L +. Results on several hundred thousand children inoculated with this preparation indicate that about 90 per cent receive an immunity following three inoculations which lasts from

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several years to possibly a lifetime. Ramon of Paris introduced a toxin treated with formaldehyde which has now been used quite extensively and seems to be effective. This preparation called anatoxin has the advantage of containing no sensitizing serum protein. Another modification has been used by Larson of the University of Minnesota in which the toxin is detoxified with sodium ricinoleate, the effectiveness of which, while promising, must await further observations. The Schick test is extremely important for physicians to carry out six months after immunization has been induced.

SCARLET FEVER

Since the epoch-making work of the Dicks, scarlet fever toxin has been employed in an endeavor to accomplish permanent immunization to scarlet fever, repeating a procedure similar to Gabritschewsky's in 1905. The scarlet fever committee has recommended the use of five injections of 500, 1,500, 5,000, 15,000 and 20,000 skin test doses of toxin at intervals of a week as a minimum. This procedure has proved effective in a large number of cases in rendering a positive Dick test negative. The naked scarlet fever toxin is so extremely potent, however, that this procedure frequently produces severe reactions and for this reason many physicians have felt the necessity of its discontinuance. Larson's preparation of scarlet fever toxin mixed with castor oil soap has now been given to a large number of children in the Northwest. As large a dose as 3,000 skin test units detoxified in this manner may be safely injected at one time with practically no general systemic effects. The Dick test has been found to be negative in a comparatively large percentage of these cases to date but the work is still in progress and the cases have not been observed over a sufficiently long period of time to justify any definite conclusions. It is true that certain of these children have developed scarlet fever. This, however, should not cause us to prematurely feel that attempts to immunize against the disease have failed. We now have evidence that the organism causing scarlet fever appears to be of two different strains with respect to fermentation of mannite, and the accumulation of further knowledge may reveal that more complete immunization may be accomplished by using a polyvalent material from organisms at present not identified, in addition to that from the strains isolated to date. Even when this is accomplished scarlet fever immunization undoubtedly, like diphtheria immunization, will not prove effective in one hundred per cent of cases. The results obtained from inoculating 13,000 children in Minneapolis are very encouraging. According to the records of the Health Department during a nine month period extending from November 1, 1926, to June 19, 1927, in about 92,000 non-vaccinated children one in every forty-seven contracted scarlet fever. Among the 13,000 who were vaccinated during this same period only one case occurred in every 650 children. In the non-vaccinated group therefore the disease was about fourteen times as frequent as in the vaccinated group. Somewhat similar results have been obtained in Cleveland in a group of about 2,000 children.

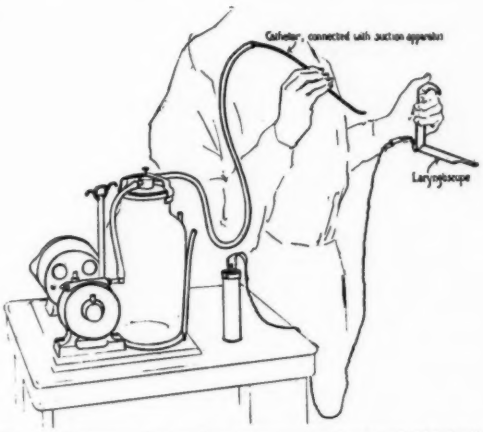

Fig. 1. Apparatus for suction treatment or laryngeal diphtheria.

In conclusion it can be said that the accomplishments of scientific investigation include the identification of a toxin producing hemolytic streptococcus as the cause of scarlet fever. This toxin has lately been employed for immunizing purposes both in its naked form and when detoxified by means of castor oil soap with encouraging results. Physicians therefore are now in a position to attempt to immunize their clientele against this disease but for the present should explain to their patients that to date the certainty that the individual will be immunized and the duration of the immunity is not fully established. Patients should understand that

while the records indicate that many will be given a varying degree of immunity they should not be disappointed if the inoculations should fail in a certain percentage of cases. From our own observations on the Dick test during the past three years it would appear advisable to administer three injections of at least 3,000 skin test doses each at seven day intervals and to give one injection of 3,000 to 5,000 doses at the end of twelve months to prolong or reestablish immunity.

Antitoxin.—The therapeutic value of scarlet fever antitoxin was studied by one of us in a series of two hundred cases. The commercial preparations used were apparently specific and caused rapid blanching of positive Dick tests.

Acceleration in clinical improvement, as gaged by temperature, rash and symptoms, was quite definite in one hundred receiving antitoxin, particularly in those to whom antitoxin was administered early.

When given early, the serum has a beneficial effect on the toxemia and seems also to reduce the number of complications, although no effect on septic processes is noticeable. Small prophylactic doses of serum in this group did not prevent later infection with scarlet fever.

Serum sickness in one-fourth of the cases was an annoying factor and in one-tenth of the cases it was extremely discomforting to the patient, especially in those who had previously been sensitized to horse serum through diphtheria immunization.

TUBERCULOSIS

During the past twenty years methods of diagnosis and treatment have undergone considerable change. The von Pirquet test remains today of value in detecting those individuals who have been infected by the tubercle bacillus some time in the past. Recently one of us has modified the technic of applying the von Pirquet test and feel that it has certain advantages. The modification involves making a single puncture with an ordinary needle, penetrating the epidermis through a drop of tuberculin placed upon the skin. This method is equally or even more sensitive than the usual scarification or scratch method of performing the von Pirquet, is less objectionable to the child, and has the further advantage that the tuberculin may be wiped off immediately after performing the test without altering its effectiveness.

In the treatment of tuberculosis, Gerstenberger has reported excellent results in treating young children having parenchymal pulmonary tuberculosis and cavities with ultra-violet rays. The authors have recently employed artificial pneumothorax in an infant five months of age who had an extensive unilateral pulmonary tuberculosis. Since instituting artificial pneumothorax this infant has made a remarkable change from what seemed impending death when first attempted, to a normal, fat, temperature- and symptom-free infant at the age of nine months. This demonstrated that artificial pneumothorax has a place in the therapy of pulmonary tuberculosis in infancy as in the adult.

The possibility of vaccinating the new-born, especially as the result of the work of Calmette and Guerm, has recently attracted attention. Since July, 1924, over forty thousand children in France, Belgium, Greece and Indo China have been vaccinated by the administration of the Bacillis Calmette Guerm B. C. G.: a vaccine of living tubercle bacilli of bovine origin, rendered avirulent for all animals by 230 passages of bovine bile medium. This may open a new era in the eradication of tuberculosis but for the present the procedure probably should not be employed too enthusiastically or on too large a scale until its value is more firmly established. Vaccination to create an absolute immunity against infection by the tubercle bacillus undoubtedly can never be accomplished. A relative immunity, however, which enables one to withstand small infection apparently can be accomplished. Petroff feels it is safer to accomplish this with dead tubercle bacilli rather than with living avirulent B. C. G. Petroff believes that dead tubercle bacilli or some of their derivatives can be used safely and effectively in immunizing the human race.

ERYSIPELAS

For years the treatment of eryysipelas has been empirical and symptomatic. Recently one of us has made a study of the therapeutic value of roentgen ray and serum therapy in this disease. Observations were made on 155 cases of erysipelas, of which 35 controls were treated with local application, 80 with roentgen irradia-

tion, 30 with erysipelas antitoxin and 10 with *x*-ray and antitoxin combined.

The efficacy of the *x*-ray therapy is demonstrated by the very prompt return to normal temperature (1.5 days in irradiated groups, as compared with 3.4 days in the controls), and more rapid disappearance of symptoms such as pain, toxemia and general malaise (two days in the *x*-ray groups as compared with eight days in the controls).

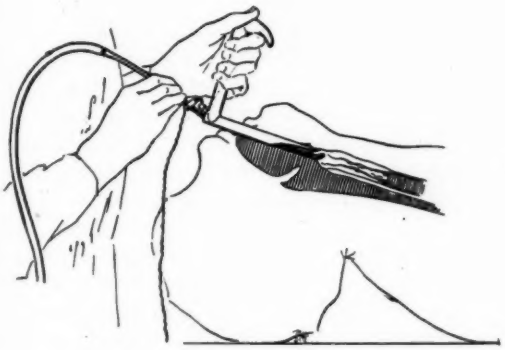

Fig. 2. Laryngoscope in place.

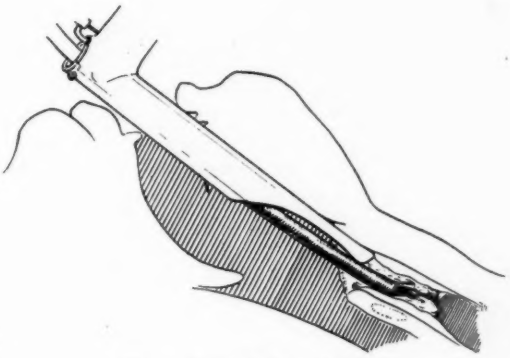

Fig. 3. Removal of membrane.

Extension of the disease occurred less frequently in the irradiated group (21 per cent) than in the controls (68 per cent). Such extensions as did occur in the former group were usually slow in progress, slight in extent and often developed as isolated areas not in contiguity with the original diseased area.

The mortality in the *x*-ray group (6 per cent) was only one-fourth of that (23 per cent) in the control group, in spite of the fact that the former included more infants than the controls.

Erysipelas antitoxin reflected its value by the return to normal temperature and subsidence of symptoms in 2.2 and 3.8 days respectively, as compared with 3.4 and 8 days respectively required for the control group.

There was less tendency of the disease to spread in cases treated with serum (46 per cent) than in those treated by local applications (68 per cent).

The mortality among the patients receiving erysipelas antitoxin (6 per cent) was about one-fourth that recorded for the controls.

Our observations indicate that antitoxin and roentgen irradiation are both of definite value in the treatment of erysipelas. The *x*-ray seems to be especially effective in inhibiting a spread of the disease and also in bringing about a prompt subsidence of temperature and alleviation of symptoms.

Successful results following the use of antitoxin and *x*-ray combined, in ten cases in which the prognosis was considered especially grave from point of view of age of the patient and extent and severity of the disease, indicate that the best form of treatment available at the present time includes the intravenous, intraperitoneal or intramuscular administration of erysipelas antitoxin in adequate dosage, in addition to a proper (large) roentgen irradiation of the involved area and the contiguous normal skin.

THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS

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THE chain of thought which will lead a physician to the successful early diagnosis of pulmonary tuberculosis must resemble the firmly fixed chain by which Aristæus held Proteus when he changed in rapid succession into fire, flood, and a horrible wild beast. The links of the chain are composed of the constant thought "tuberculosis" no matter what protean sign or symptom the patient presents. In the case of practically every disease the physician must consider the possibility of tuberculosis. He should expect to be able to make an exact diagnosis of tuberculosis in at least two per cent of his clientele. Easy exhaustion, digestive disturbances, headaches, nervous irritability, insomnia, fever which at times may resemble typhoid, tachycardia, malaise, anemia, weight loss, pain in the chest, local and general sweats, frequent throat clearing, fistulæ, blood spitting, susceptibility to colds, dry or productive cough, disorders of menstruation are some of the symptoms and signs which call for most careful investigation for pulmonary disease. The most important part of the study of each patient is the careful taking of the history. The next most important step is the close scrutiny of the patient by the trained eye of the clinician. It is a stigma on the medical profession that lay people who have been closely associated with the tuberculous, as in a health resort, can recognize a consumptive type long before many physicians can make an exact diagnosis. The toxin of the disease creates objective and subjective signs such as wasting of the neck muscles, flushed cheeks, glistening eyes, a delicate appearance, easy fatigue, temperamental disturbance and even a weakened voice; any of which should arouse suspicions of tuberculosis. On the other hand, advanced tuberculosis may be present in some people with absence of all such symptoms.

Physical Examination.—Inspection will reveal a lagging of one or both lung apices.

Palpation enables a confirmation of possible lagging, determines the excursion of the chest wall, detects the increased or decreased vocal resonance, the position of the heart apex beat, which may be changed by a diseased lung, and the position of the trachea, whether misplaced to right or left. Percussion is valuable in detecting impaired resonance at the lung apex, and percussion with the tips of all five fingers, as advocated by Auenbrugger, who introduced the art, is very valuable over the bases of the lungs to bring out basal lesions, thickened pleura or pleurisy.

Auscultation is probably the most important means of investigation. Changes of the breath sounds such as prolonged, high-pitched expiration, quiet breathing and râles are to be noted. It is best to begin auscultation by placing the stethoscope in the lower axilla, and moving the bell upward after each expiration. To determine the presence of râles the patient should be instructed to breathe in through the mouth, then to breathe out and to give a slight cough with the last part of the outgoing breath. Râles are apt to be heard in showers, and usually occur after the cough at the time the breath is inspired. They should especially be sought at the apices posteriorly and above and below the clavicles. It must be remembered that occasionally the residual fractions of the broncho-pneumonias of influenza may for a while give rise to a shower of râles similar to tubercle.

X-ray Examination.—The *x*-ray films should always be inspected by the clinician. Special technic is needed to produce proper *x*-ray pictures of the chest and it is a serious matter that so many poor films are taken. The *x*-ray may indicate that tuberculous lesions found on physical examination are actually more extensive or at times less extensive. Areas of tubercle deposits are frequently found in healthy people at the roots of the lungs. The films should be carefully inspected for tubercle lesions in the parenchyma of the lungs.

Fluoroscopic study is of value in noting the lung aeration and the excursion of the diaphragm. Early diagnosis rarely can be made by the fluoroscope and, generally speaking, film study is the more essential.

Laboratory Examinations.—Specimens of spu-

ta should be taken and sent to a reliable laboratory. At times many specimens are necessary before a positive diagnosis can be made. Patients often relate that, suspecting their own condition in spite of negative finding by their physicians, they have of their own accord sent sputa to public laboratories and the correct diagnoses have been made. There are no reliable blood tests for the detection of tuberculosis. An increase in the white cell count and a decrease, or at times increase, in the total lymphocyte element are at times suggestive.

Temperature Study.—Any person suspected of pulmonary tuberculosis should be put to bed for at least a week and the temperature and pulse carefully studied. One or two temperature observations at the time of office visits are most unreliable. An afternoon or evening temperature of 99 or over needs explanation. The resting pulse should be normal in a healthy person. In patients with tuberculosis it is almost always accelerated.

Tuberculin Tests.—The skin tuberculin tests have no value in the diagnosis of adult tuberculosis. The subcutaneous test can be dangerous and should be used by experts only.

Differential Diagnosis.—Almost any disease, from hookworm to aneurysm, may suggest tuberculosis. Repeated negative sputum findings should always lead to a careful search for bronchitis or bronchiectasis associated with infection of the nasal accessory sinuses. In such cases the rule should be to order *x*-ray pictures of the sinuses. Lung abscess and rare chest diseases such as aspergillosis, streptothricosis and even syphilis are conditions the tuberculosis specialists are constantly watching for. Thyrotoxicosis is a condition which may resemble tuberculosis, especially in weight loss and in fever and pulse variations. A definite increase found in the metabolic rate determines the diagnosis in favor of hyperthyroidism. Possibly the greatest difficulty in differential diagnosis is found among patients in whom occult tuberculosis is suspected. They may have no cough and present no physical signs, and parenchymatous lesions of the lungs are not detected by the *x*-ray. In these people, most frequently women, a daily elevation of temperature is noted and also an accelerated pulse. A careful investigation must be made in regard to the thyroid gland, tonsils, teeth, gall bladder and pelvic organs before a diagnosis of occult tuberculosis is made. Tonsils should not be removed, especially in adults, unless a very careful study of the chest has been made.

The early diagnosis of pulmonary tuberculosis would be more often made if physicians would keep uppermost in their minds the frequency of the disease and their responsibility to be constantly alert to the possibility of tuberculosis in so many maladies for which they are consulted.

Editor's Note: The above article is one of a number which are appearing in medical journals throughout the country in connection with a nation-wide campaign being launched in March by the National Tuberculosis Association for the early diagnosis of tuberculosis. In addition to calling the attention of the medical profession to the importance of early diagnosis the attention of the public will be directed to the early symptoms of tuberculosis by means of pamphlets to be distributed by state and county tuberculosis societies, billboard posters and moving picture reels. The campaign will be financed by the income afforded by the sale of Christmas seals.

REPORT OF INSPECTIONS OF SCHOOLS OF CHIROPRACTIC AND NATUROPATHY IN THE UNITED STATES*

PERSONAL inspections have recently been made of all schools existing in the United States for the teaching of particular methods of treating human diseases. While a complete report of all information secured would hardly be justified, a brief résumé of conditions found in schools of chiropractic and naturopathy will be of interest to both physicians and laymen.

SCHOOLS OF CHIROPRACTIC

Chiropractic is said to have originated in 1895 with D. D. Palmer, a magnetic healer of Davenport, Iowa, and to have been "developed" by his son B. J. It is in reality the older osteopathic concept very slightly modified and renamed. It was the enlarging of the osteopathic field and the lengthening of the osteopathic curriculum that gave chiropractic its opportunity, and the latter's rapid development has been due largely to the fact that it offered a short-cut to osteopathy.

According to this theory disease is due to vertebral subluxations which cause a pinching of spinal nerves between bones. This pinching interferes with the flow of "Innate Intelligence" or vital energy to the body tissues. The spinal "adjustment" alone renews that flow and restores health.

Chiropractic has had, during its brief career of thirty-two years, about one hundred and fifty schools. Forty of these are still active, many of them offering courses at night only and having a mere handful of students; more than half of the forty are so poorly housed and so inadequately financed that their future is problematic. B. J. Palmer, the "developer" of the cult, recently said: "According to our records, forty-eight chiropractic schools have closed their doors during the past two years.[1]

An entrance requirement of four years of high school study or its equivalent is claimed by the best of these forty schools; it is probable, however, that not one of them is enforcing the requirement. Mature age, business experience, ability to carry the chiropractic courses, or any convenient achievement is declared to be a satisfactory equivalent. A few schools give ridiculously short and easy high school quiz courses and certificates, for which a special tuition fee is charged; this course in one of the best chiropractic schools[2] occupies two evenings weekly for six months. But fifty per cent or more of these schools do not even claim to require a high school education.

The courses offered in the majority of these schools run through "three school-years of six months each." They are poorly chosen, poorly arranged, and very poorly outlined. The student may begin on any school day of the year and finish on the same day of the eighteenth month thereafter. There are no adequate records of amount or quality of work done. Going to school is a matter of "doing time," and the student is given his doctor's degree as soon as the time limit expires. Legislation has forced a few schools to lengthen their courses to twenty-four or twenty-seven months. When this is done, the school usually shortens its working day to three or four hours as compensation, and holds out to the student his ability to spend the remainder of his time earning his expenses. Also, in almost any twenty-four or twenty-seven month school, a student may graduate at the end of eighteen months if he declares his intention to practice in a state requiring only that amount of study. A few schools require less than eighteen months, and one of the most widely known gives only a home-study course that may be finished within three months.

The equipment invariably found in these schools consists of a few adjusting tables, students' chairs, and desks. Some have turned to physical therapy or naturopathy and installed a varying amount of electrical apparatus. A very few have *x*-ray machines, used (except in one instance[3]) in "spinography." About eight of the forty schools have small chemistry laboratories, with equipment for the very simplest experi-

*Inspections were made during the summer and fall of 1927, by representatives of the Council on Medical Education and Hospitals of the American Medical Association. The schools included in these inspections are the schools of chiropody, chiropractic, naturopathy, optometry, osteopathy and physical therapy, as well as a large number of miscellaneous institutions.

1Article: "The Great Undertow."

2National College of Chiropractic, Chicago.

3The Pasadena College of Chiropractic reports that its students are taught x-ray therapeutics.

ments only. Two or three have dissection laboratories. None of the forty schools have laboratories for physics, physiology, physiological chemistry, bacteriology, histology, embryology, or pathology. Courses in these important laboratory subjects are either given by the didactic method or omitted altogether.

The clinics are not adequate for training in the recognition of even the most common disease. There is no adequate apparatus for the diagnosis of such diseases. The treatment procedures taught and practised do not include the therapeutic measures of demonstrated value, and so the patient is left practically without either diagnosis or treatment. There are no hospitals to which patients in need of hospitalization are referred, and none in which students may study the progress of cases.

The faculties of these forty schools are made up of men of very poor educational qualifications. While a very few are both educated and shrewd, and an occasional doctor of osteopathy or even of medicine may be found among them, the great majority are not trained in any of the "medical sciences," the non-medical sciences, or the liberal arts. They are frankly out of sympathy with the organized medical and public health interests, and are openly antagonistic to many of the most universally recognized facts and procedures of civilized life.[4] They circulate, by word of mouth and through the school literature, greatly misleading statements about the chiropractic "profession," ambiguous testimonials concerning the cure of incurables, and wild claims about the schools themselves which a most superficial investigation proves to be without foundation in fact.[5]

SCHOOLS OF NATUROPATHY

While a venerable old age is claimed for naturopathy, its development has really been more recent than that of chiropractic; its chief exponent, Benedict Lust of New York, claims that he organized the "parent school" in 1896, but even so ancient an origin as that is improbable.

The cult seems to have no basic idea but to be rather a nature-cure hodge-podge with a decided antipathy to drugs. In fact, naturopathy has developed in part as an effort to broaden the scope of chiropractic. There are about five schools of naturopathy and all of them teach chiropractic. Several of the chiropractic schools teach naturopathy. Probably fifty or even seventy-five per cent of the practicing naturopaths have been recruited from the ranks of chiropractic, and the two cults have always been on the friendliest terms.[6]

Entrance requirements are said to include four years of high school study or its equivalent, but none of the schools of naturopathy really enforce this rule. Records are not kept; the student's word is taken in the matter, and if he is so thoughtless as to confess that he lacks the high school requirement the matter is either forgotten or patched up with as little embarrassment as possible. One school offers a night course in which the deficiency may be made up (extra tuition being charged for this service), but admits that the requirement has never been enforced.

The courses run through twenty-four or thirty-six months, with a short school day and an evident carelessness regarding attendance. It is probable that only one school has day-classes. These institutions show a marked tendency to have students attending two or more "schools" simultaneously. One school, for example, which claims to operate under about twenty different names, offers "a liberal reduction to students taking four or more courses (schools) at the same time." Another tried to enroll the inspector in two "schools" at once when fifty per cent of the sessions of one conflicted with the sessions of the other. One school counts attendance in each class twice—once for naturopathy and once for chiropractic—and so claims to pile up 6,000 class-hours (thirty-minute periods) of study, thus "qualifying" under the new Florida law; this school gives every student two diplomas, and many students three or more, each diploma bearing a different name for the school. No outline of the courses offered is published by any of the schools of naturopathy.

[4]For example: vaccination, typhoid immunization, specific medication, diphtheria antitoxin, quarantine, focal infection, germ theory of disease, etc., etc.

[5]Thirteen of these schools have made affidavits to the American College of Chiropractors that the curriculum includes 3,528 forty-five-minute hours of work, and on the basis of these affidavits have been rated by this "college" as "class A schools" and awarded "diplomas of honor." Allowing for ten-minute intervals between classes and five school days per week (considering that not a single holiday is allowed during the eighteen months of the course), this schedule would require more than eight hours of actual attendance daily, a program which no school of any nature would attempt to follow. The American College of Chiropractors admits that none of these schools were inspected prior to their being rated and that none of their claims have been investigated since.

[6]The chiropractor may easily become a naturopath by taking a three-month "post-graduate" course in one of the naturopathic schools.

The subjects include sysmotherapy, glucokinesis, zone therapy, physicultopathy, astrological diagnosis, practical sphincterology, phrenological physiology, spectrochrome therapy, iridiagnosis, chiropractic, diet, hydrotherapy, osteopathy, physiotherapy, electrotherapy, mechanotherapy, heliotherapy, tension-therapy, naprapathy, neuropathy, physical culture, and many others.

The equipment in these schools differs little (if at all) from that found in schools of chiropractic, except that a small amount of electrical apparatus is usually found, and adjusting tables are not quite so much in evidence. A small chemistry laboratory is usual; that of the "parent school" in New York has room for two or possibly three students, but has not sufficient equipment for so large a number to perform the same experiments at the same time. There are no laboratories for physics, physiology, physiological chemistry, anatomy, bacteriology, histology, embryology, or pathology.

The clinics are even less adequate than those of the chiropractic schools. No school of naturopathy has a hospital associated. The therapeutic procedures include chiropractic, osteopathy, hydrotherapy, electrotherapy, diet, and a wide range of so-called "natural methods."

The faculties of these schools are composed of untrained men, many of whom have been recruited from the schools of chiropractic. Their educational qualifications are so like those of teachers of chiropractic that no further statement is necessary. That such instructors should train students in the proper use of so wide a variety of therapeutic measures, and do it within the short time allotted, is obviously impossible.

GENERAL DISCUSSION

In such a brief report many matters of interest must be entirely omitted and many others no more than mentioned; elaboration, though a constant temptation, is one which brevity forbids. But to one who is familiar with the elaborate equipment and curriculum found necessary to proper training in the science and art of healing today, the most impressive thing about these naturopathic and chiropractic schools is not what they are, but what they are not. A few statements from this point of view will properly close the report itself and also form an appropriate prelude to the list of schools following.

1. Of the fifty active schools listed, a few are mere "branches" rather than separately existing institutions, and these fifty constitute less than one-third of the number formerly existing.

2. All but a mere handful of these fifty existing schools are so poorly housed and so inadequately financed that their continuation is problematic.

3. Very few of these schools have even one adequately trained teacher on the faculty, and there are probably less than five expert all-time teachers in the entire lot of fifty institutions.

4. Not one of these schools actually enforces a matriculation requirement of even five minutes of high school study.

5. Not one of the fifty schools gives so much as one worthy laboratory course or has one worthily equipped laboratory.

6. Not one of these schools conducts a clinic in which a wide variety of the common diseases may be studied.

7. There is not one clinic equipped with the trained personnel or the scientific apparatus for the clinical diagnosis of a variety of the common diseases, nor having a laboratory equipped for checking such clinical diagnoses.

8. There is not one clinic equipped for the proper treatment of patients suffering from such diseases.

9. There is not one of these schools whose students or whose faculty may enjoy the privilege of practice or even of observation in any worthy hospital.

10. There is not one of these schools that does not proceed on the basis of unproved theory, ignoring the lack of endorsement by all worthy educational institutions.

11. There is not one of these schools that does not ignore or even avowedly oppose the scientific point of view and the facts of medical science accepted by the authorities of the entire civilized world.

12. There is not one of these schools that does not owe its existence to the fact that it offers a short-cut to the practice of medicine.

INSPECTION REPORTS

Minnesota Chiropractic College.—Inspected Sept. 12, 1927. This school is located at 70 Willow St., Minneapolis, and is conducted by Dr. Robert Ramsey, a graduate of the National School of Chiropractic and of the Chicago College of Ophthalmology (!). It was chartered in 1912, and has probably seen more pros-

perous days than the present. Ramsey is a good salesman and seems to be enjoying a good private practice, but his principal teaching interest has now changed from chiropractic to naturopathy and he has only a small number of students studying either (or both). For this reason (probably), he has very recently started a class in laboratory technic; he claims an enrollment of sixty girls in this class—probably a gross exaggeration.

The buildings consist of two stucco residences which have been rearranged, one for the school and one for the "Ramsey Hospital." An enclosed passage-way has been built from one to the other. The first floor of each is adapted more to a physical therapy clinic than to anything else; on the school side there are small treating booths, a front office, two small class rooms of which one contains ten students' chairs and one twenty, and (in the rear) a chemical laboratory into which twenty-five students might be crowded, but almost bare of equipment; on the hospital side are more treating booths and a front office. In the enclosed passage-way are kept eight or ten pathological specimens, half of which are human embryos; Dr. Ramsey proudly pointed to these embryos, fondly displaying one specimen two centimeters in diameter with an oblong central figure; "That's the placenta," he said, "and this is the baby—twenty days old—not a doctor in the city has another like it!" When asked how many patients were usually in the hospital, he replied, "Anywhere from six to sixteen."

The buildings are two-and-a-half stories high, but the inspector was shown only the first floor. Several treating booths had patients in them. The booths shown were equipped with treating table and chair and some piece of therapeutic apparatus, usually a light or an electric generator. One dark-heat cabinet was shown, with a bath tub in the same room. An "ozone inhalation" machine, able to accommodate four patients at a time, was demonstrated. "This," said Dr. Ramsey, "sterilizes the entire blood stream."

Twenty-two students are said to have been graduated this year; about twenty-two are said to have remained in the school, and the fall class enters today; one new student, according to Ramsey, signed up today (the day of the inspection). Dr. Ramsey's way of reporting numbers destroys confidence in him. His school is probably much smaller than he indicated. One student was seen (probably the one who had just been signed up), but there were no others about, in spite of the fact that the courses were just beginning. This one student did not know what hour the courses were supposed to start, and he seemed to be hanging around with nothing to do and no one giving him the slightest attention.

The course for either chiropractic or naturopathy is said to run through twenty-four months; the combined course may be finished in about thirty months. The tuition for either course is $600, and that for the combined course is $1,000. High school graduation is said to be required. It was stated by Dr. Melvin Gates, a naturopath and physiotherapist of Minneapolis, that Dr. Ramsey had recently been found to have misappropriated funds of the naturopathic association and also to have sold at least two naturopathic diplomas. The naturopaths are now encouraging young men to start the practice of naturopathy in Minnesota, either with or without educational qualification, with the expectation that they will be legalized and licensed without examination within two years.

Dr. Ramsey stated that when the college was running full-force (?) there were fourteen on the faculty, but just now about four besides himself were doing all the teaching. No instructors except Dr. Ramsey were seen, and it was the day on which the work of the year was to begin.

Professional Assistants' Training School.—Inspected Sept. 12, 1927. This school is the old Lincoln Chiropractic College, but with such a change of both name and work that it is almost unrecognizable. It has used many addresses, all in Minneapolis. 803 Hennepin Avenue and 17 S. Eighth St. are the two entrances to the Walker Building, in which the school once occupied rooms 217 and 219. 1500-1502 and 1417 E. Franklin St. are the addresses of the old Ortho-Chiropractic College of which Ernest Du Val was dean, and which combined with the Lincoln Chiropractic College at a time when the two schools are said to have had "only one student between them"; the combined school moved from 1417 E. Franklin St. to 1600 Harmon Place last March. At the latter address the school continued to offer a chiropractic course, as it does at present, in the name of Lincoln Chiropractic College, but it displayed the name of Professional Assistants' Training School and began to turn its chief attention to a course in physiotherapy with the offer of both physiotherapy and naturopathy diplomas. Last week it moved to 424 Second Avenue South, and its lack of interest in the chiropractic course is quite evident.

The school has adequate quarters on the second floor of a brick building. The most evident fact about it is, it is a workshop—for training rather than teaching. Classes meet in the clinic room, and much of the lecture work is doubtless instruction in the use of the apparatus. There are four large diathermy machines, one Morse-wave and two other generators, two Alpine lamps, one deep-therapy lamp, and fifteen or twenty chairs, all in this one room or in the treating booths curtained off from it. Across the hall is a large laboratory in which are six good microscopes (four of them new), a four-tube electrical centrifuge, and a considerable supply of reagent bottles, test tubes, and other chemical laboratory paraphernalia. Two or three doctors' offices adjoin the clinic room.

Classes are held mornings and until one o'clock, after which students may remain for clinics. There are separate evening classes for those who cannot attend during the day. The course reaches through from three to six months, depending on the student's ability to master it, and the tuition is $150. A physiotherapy diploma is given, and for $10 additional, but without additional work, a diploma (and degree) in naturopathy.

The naturopathic diploma is issued by the Lincoln Chiropractic College. A chiropractic course, reaching through twenty-four months, is said to be offered, but it is highly improbable that any new students are be-

ing enrolled for it. All interest is evidently in the physiotherapy work, given under the name of the Professional Assistants' Training School. The student is advised to take this course, buy the additional naturopathic diploma, go to a state that has no naturopathic law and begin practice; he will then be licensed without examination when a naturopathic law is enacted. Attention is called to the fact that there are about 800 chiropractors licensed in Minnesota, not over 300 of whom were examined. It is expected that "dozens" of states will enact laws regulating naturopathy within the next few years, and the "grandfather clause" is counted on as an unfailing feature. It served the osteopaths and then the chiropractors; it is now serving the naturopaths; under what name the next crop of incompetents will claim its favor is not yet known.

The student body is said to number twelve and the faculty four. Three of the faculty members are permanent; the fourth varies; he usually represents some electrical supply house. Dr. McAvoy, who seems to be in charge of the school, states that he holds an "O. P." certificate or license from Illinois. He is intelligent, earnest, and business-like. He claims to be curing numerous cases of gonorrhea by the use of diathermy; he inserts one electrode into the urethra (or into the rectum if there is prostatitis), and by observing an attached thermometer he keeps the affected tissues at 107 degrees (?) for five minutes; by three weeks of such treatment he states that he has quite recently cured a case of gleet of twelve years duration; the gonococcus, he declares, cannot survive a temperature of 107 degrees. Other faculty members were not discussed, and repeated requests for catalog or other literature were ignored.

CASE REPORTS

KIENBOCK'S DISEASE

REPORT OF CASE

F. W. VAN VALKENBURG, M.D.
Long Prairie, Minnesota

Kienbock's disease is the name given to a chronic slowly progressive type of osteitis of the semilunar bone, causing pain and disability.

W. Mueller recognized three forms of the conditions and classified them according to their etiology.

1. Anatomical form—due to abnormal pressure lines from anatomical anomalies.

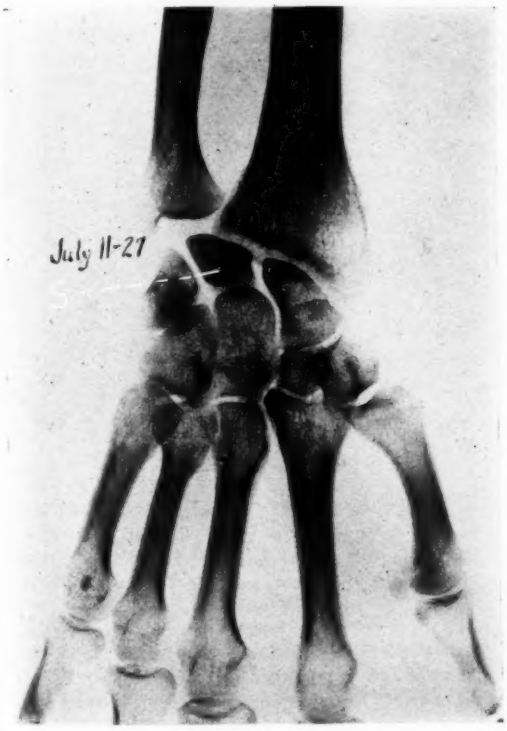

Fig. 1. S, semilunar bone.

2. Occupational form—due to repeated minimal trauma.

3. Traumatic form—due to a single marked pressure insult.

The etiology is ascribed by Kienbock to a momentary laxation in the course of which there is an avulsion of the dorsal ligaments with tearing of the most important blood vessels. The pathological report on the case given here was bone atrophy, which would tend to support the idea of a nutritional disturbance.

The first complaint of the patient is that of a lame wrist. A history of trauma violent enough to account for the severity of the lesion may or may not be obtained. When the disease is fairly well advanced, which usually requires from six to eight months, examination reveals the following:

1. Definite tenderness on pressure over the semilunar bone.

2. Limitation of flexion and extension of the wrist.

3. Swelling of the wrist, without local heat or

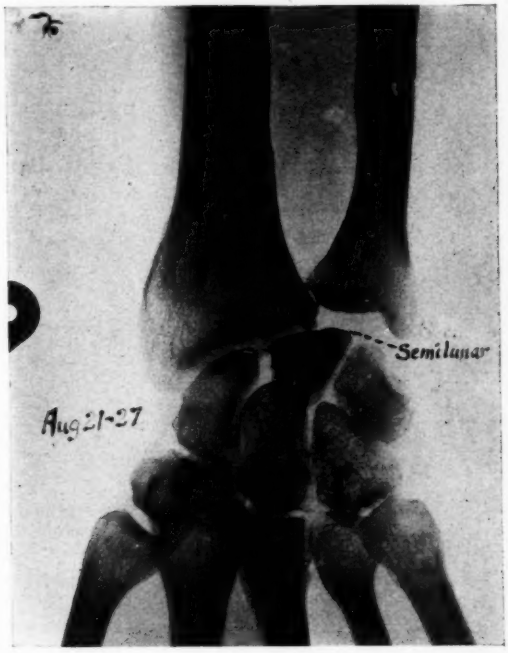

Fig. 2.

redness, which is increased or brought about by use of the hand.

4. The head of the third metacarpal is on the same level as those of the second and fourth, while normally it is more prominent.

5. Pain localized over the semilunar bone on tapping the head of the third metacarpal with the fist closed and the hand in ulnar adduction.

X-rays made early usually are negative. The films made later, about the seventh to the ninth month of the disease, show the semilunar bone

whiter and more dense and also the detail exhibited by the surrounding bones is lost. Still later, added to the above, there is fragmentation and shrinkage of the bone.

The following diseases should be considered in differential diagnosis.

1. Tuberculosis. The joint is stiff and partly flexed, with some muscular atroply. In late cases the joint presents a puffy swelling, loses its contour and becomes spindle-shaped. The *x*-ray shows bone destruction and in late cases new bone formation.

2. Chronic Arthritis. There is a nodular swelling of the joint with muscular wasting and pain on movement during exacerbations. A history of other joints being involved at one time or another is usually obtained. The *x*-ray is generally negative.

3. Lues. Involvement of the wrist most often takes the form of a periostitis. Other signs of lues can be found and a positive Wasserman obtained.

Conservative treatment, such as immobilization for one or two months together with massage and electricity to avoid atrophy, is advocated in the early cases, while operation is advised for the cases of long standing and those in which conservative treatment has failed. Goldsmith presented three cases, advised operation in two cases, which was refused, and was unable to trace the third. In the two cases he was able to follow, one reported the wrist a little lame and the other reported that the wrist was lame, painful and swollen. In Henderson's two cases operation was advised against, and no follow-up is reported. The first operated case reported in American literature was by Joseph J. Kurlander, and his patient wrote him two months after the operation as follows: "I can say that my wrist has not troubled me again, since I went back to work, although it is a little more stiff than the other one." The second operated case was that of Roscoe C. Webb, and his patient sixteen months later stated that his wrist did not hurt and he had been working steadily for over a year.

Fig. 3. F, site of beginning fracture.

Fig. 4. S, semilunar bone.

Because of the fact that conservative treatment had failed and the patient was practically incapacitated as the pain and swelling became gradually more pronounced, we decided to remove the semilunar bone and offer the following case report:

E. C., cabinet maker, male, aged 39, first consulted the writer in April, 1927, because of a lame right wrist, which had troubled him since November, 1926. There was no history of injury to the wrist. Examination showed limitation of flexion and extension at the wrist joint with no swelling. A blood Wassermann proved negative, the patient advised to wear a wrist support and return for observation. The first part of June, 1927, the wrist became markedly more painful, especially at the base of the thumb and on

the palmar surface of the wrist joint. The pain was of a dull aching character, was increased by work and use of the hand and was accompanied by swelling with no local heat or redness. Almost at the beginning of his trouble he experienced pain in the wrist when pulling with the thumb and index finger.

On July 5 a cast was applied to the wrist, which enabled the patient to return to work to a limited extent after a month's enforced idleness.

Dr. R. G. Allison reported on *x*-rays as follows:

July 11, 1927. Plates show a definite sclerosis of the semilunar bone of the wrist. There is no evidence of bone or joint destruction.

August 21, 1927. Plates show a beginning fragmentation of the semilunar bone. In addition there is beginning palmar dislocation of the semilunar bone.

September 22, 1927. Plates show a beginning fracture through the semilunar bone. There is no further evidence of pathology.

Conclusions: The findings in the semilunar bone of the wrist are those of Kienbock's disease, which is a localized process. The condition has progressed definitely since July, and I believe the treatment is complete removal of the bone.

Casts had been applied to the wrist from July until October. These enabled the patient to work to a limited extent, although there was some swelling and considerable pain when the hand was used at all extensively.

On October 4, 1927, under ether anesthesia an incision one and a half inches long was made in the dorsal surface of the wrist. The tendons of the extensor muscles were retracted and the semilunar bone dissected free from its surroundings and removed in fragments. Dressings and support by means of a splint were applied.

Dr. E. T. Bell reported on the specimen submitted as follows:

Microscopic sections show bone atrophy; no signs of inflammation. This shows atrophy of the bone, but I suppose it would be classified as Kienbock's disease.

The patient was able with wrist supported by a strap to return to work in a month. There has been a steady constant improvement although lateral movement of the hand causes slight pain. He has said that if it never gets any better than it is at present, the result is satisfactory to him. Extension and flexion are approximately one-half that of the left wrist.

SUMMARY

1. Kienbock's disease is a chronic progressive disease with definite findings which can readily be diagnosed by close observation and use of the *x*-ray.

2. Judging from the comparative results of conservative and operative treatment in the cases cited and the continued disability from this disease, operative removal of the bone is justifiable.

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MULTIPLE MYELOMA

REPORT OF CASE

A. Christiansen, M.D.
Saint Paul

The diagnosis of this extremely rare disease is comparatively simple if one is looking for it. However, in looking up the literature one finds some 13 cases reported at the Rochester clinic, Bloodgood reports 13 cases, while the University of Minnesota museum has a collection of four cases, which suffices to show its rarity.

It is an intensely interesting entity involving in its differential diagnosis a number of diseases the most important of which are metastatic carcinoma, sarcoma, the leukemias, pyelonephroma and some of the generalized cystic diseases.

This patient, sixty-eight years of age and previously in vigorous health, was an officer on the police force for thirty years. His best weight was 220 pounds.

He first came to my office about two years ago complaining of lumbar pains, loss of weight and strength described by the patient as a "run down condition." Routine examination revealed a marked pyorrhea with nine or ten carious teeth and a rather marked albuminuria. The patient was advised to go to the hospital, for further examination and treatment, but refused. He was next seen again at the office in March, 1927, almost two years later, when he again complained of the same symptoms, pain in the lumbar region but in addition there was pain higher up in the chest on the left side posteriorly, also loss of weight and strength, and an apparent anemia with yellow tinging of the skin. The patient wore an anxious expression and in general presented the same picture that was present two years previously except that the symptoms were more exaggerated. There were still present the marked focal infection and the albuminuria. However, the patient was this time prevailed upon to go to the hospital.

During the two years intervening between these office visits the patient had received a back injury in October, 1926, while turning a heavy valve, being then in the employment of the Northern States Power Co. as a night watchman. To this injury, patient attributed much of his lumbar pain, though from the history of events it was quite obvious that this was not likely.

The striking feature of this case was the lack of findings on repeated physical examinations and par-

ticularly so when considering the advanced stage of his illness. Aside from the emaciation and cachectic, anemic appearance, suggesting malignancy, there were few physical findings. The heart and lungs were normal. There was a swelling over the eighth rib on the left side in the posterior axillary line which gave a sense of crepitation to the palpating finger. *X*-ray examination showed this swelling to correspond to an indefinitely outlined mass 5 or 6 inches in length on the eighth rib, which was reported as a possible bone cyst by the roentgenologist. This tumor mass was aspirated but no fluid withdrawn; the needle passed readily into the rib mass.

The abdomen was retracted, flaccid, and no masses were palpable. The liver and spleen were not enlarged. The rectum and prostate were normal. Gastro-intestinal *x*-ray and fluoroscopic examinations were entirely negative. There was a slight tenderness over the gallbladder. The Wassermann was negative. The extremities were negative.

Blood examination was as follows: r.b.c, 2,100,000; Hg., 45 per cent; w.b.c, 3,100; p.m.n., 57; lymphocytes, 37; large mononuclears, 2; eosinophiles, 3, and basophiles 1%. Poikilocytosis and polychromatophilia were present. Coagulation time, 13.5 minutes; bleeding time, 5 minutes. Urea nitrogen, 42 mg.; creatinine, 2.8 mg. per 100 c.c. of blood. Blood pressure 110 over 60. It is quite evident we were dealing with a secondary type of anemia, the leukemias and other types of anemias being ruled out.

The urine showed heavy traces of albumin, occasional finely and coarsely granular and hyaline casts, a few pus cells, the specific gravity varying from 1,020 to 1,023. No blood cells were found. Cystoscopy was not done, as there was no evidence in repeated urinalyses of pyelitis, pyelonephroma or other kidney disease.

At this time the best diagnosis that could be made was nephritis probably due to focal infection (carious teeth, apical disease and pyorrhea) and possible bone cyst of the eighth left rib. However one could not but feel that there was malignancy present in some form or another. This patient looked malignant yet nothing could be found aside from the mass on the rib as a possible clue.

Treatment was aimed at improving the blood picture if possible and at removing the focal infection in the hope of improving the patient's general condition and perhaps of later cutting down on the rib tumor. The coagulation time was brought from 13.5 minutes to 9 and the bleeding time from 5 to 2 minutes. At this time extraction of the carious teeth was begun and required considerable time and care. There was a marked tendency to bleeding and one or two teeth were removed at intervals of one to three days and cavities carefully packed, the whole requiring about 2 weeks. In the meantime patient's pains in the chest and lumbar region were at times excruciating, the patient refused further treatment and investigation, became very despondent, and, being on the verge of melancholia, was allowed to go home. There were alternating periods of improvement and relapses, all the while the pain being the dominant symptom. At times this simulated sacro-iliac dislocation quite definitely.

However, the patient was finally prevailed upon to return to the hospital June 15, 1927, for further *x*-ray examination of the lower spine and pelvis. These led to the diagnosis of multiple myelomata. The vertebræ, pelvic bones and upper extremities of the femurs all showed disseminated areas of rarefaction varying in size from that of a pea to that of a half dollar. Dr. A. E. Lundholm suggested making the Bence-Jones test of the urine. This test proved positive. This reaction is usually present in this disease although not pathognomonic.

The patient died one month later, July 14, 1927. An autopsy was done by Dr. Wm. O'Brien of the University of Minnesota, which bore out the diagnosis.

The following is a brief report of the autopsy. There is a large edematous tumor in the eighth rib in the midscapular line; tumor removed from this region is hemorrhagic and meaty; the bone has been destroyed.

Exploration of the bodies of the first and second lumbar vertebræ shows tumor tissue similar to that found in the rib. The right ilium shows extensive destruction. The finger can be passed through the body of the bone. Rather soft red meaty tumor tissue is present in the cavity; it is also found invading the soft tissues. A similar change is found on the left side. The trochanter of the right femur is found to be soft and filled with tumor tissue.

The heart is normal. Right lung shows terminal broncho-pneumonia. Spleen, liver, stomach, intestines and other organs are negative for tumor tissue.

Diagnoses: (1) Multiple myeloma involving ribs, lumbar vertebræ, pelvis and femur; (2) invasion soft tissues of pelvis; (3) broncho-pneumonia (right); (4) adhesions over liver, spleen and appendix; (5) bilateral hydrocele; (6) cloudy swelling liver and kidneys. Unfortunately no *x*-ray films were made of the skull, the bones of which are involved in many cases.

Conclusions: The importance of *x*-ray examinations is beautifully illustrated in this case.

More liberal and early use might have resulted in an earlier diagnosis. This proved to be an extremely interesting case and one in which the predominant symptom was backache (lumbar pain) such as we meet with daily. This one symptom causes many perplexing problems and is only too often minimized in importance, which is the principal reason why some of the cults find such a profitable field among patients not investigated carefully enough.

SKIN GRAFTING*

REPORT OF CASE

S. R. MAXEINER, M.D.
Minneapolis

The case I am presenting, although nothing unusual, is interesting from the standpoint of plastic surgery. The patient has been in the Government Hospital for nearly five years for pulmonary tuberculosis complicated by glands in the neck. He was treated by different methods, including the *x*-ray.

During the past one and one-half years he has had a leather-like area of the skin with telangiectasis and an ulcer approximately 3.5 by 3 inches. The center of the ulcer contained calcified tuberculous glands. He was sent to the diagnostic center at Cincinnati, which is maintained by the Government, where a biopsy was done to rule out malignancy and a diagnosis of *x*-ray burn was established. He was returned to this city for surgical treatment.

A pedunculated flap about six inches long and four inches wide was freed in its mid-portion and remained attached over the tip of the shoulder and at the mesial edge of the left scapula. The mid-portion was rolled under to form a tube and the skin edges undercut and brought together so that the denuded area was entirely closed. At the end of about a month we began to free the flap at the base of the left scapula by cutting an inch or two at a time, sewing the skin back again after the delayed method. In order to determine the vitality of the flap a rubber band was placed around the end to be freed and it was determined that the circulation was adequate from the end which was to be left attached.

I went widely outside, at least 0.5 inch into healthy tissue, and undercut the burn, removing the greater portion of the scar tissue and invading the fibers of the sterno-mastoid muscle. After the area had been widely denuded the freed end of the flap was sutured in place and the edges very carefully approximated. At the end of one month the circulation was again tested with a rubber band. Having determined that the flap was viable, after severing the pedicle we proceeded to trim the flap and fit it into the denuded area. The patient, as I present him to you today, is quite well as far as the neck is concerned, being completely healed, and the area on the back is now almost entirely healed.

In reply to the question asked, "Was the ulcer painful?" I will state that the patient had so much pain and required so much morphine in the last year and one-half that he became a drug addict. During this time it was virtually impossible to live with him. No amount of effort would please him and he was a constant source of trouble. Since the operation he has stopped the use of morphine entirely and has become an entirely changed, pleasant and coöperative patient.

*Presented before Minneapolis Surgical Society, Dec. 1, 1927.

THE VISIT OF DR. JULIUS BAUER OF VIENNA

Professor Julius Bauer of Vienna is coming to this country under the auspices of The American College of Physicians, and will deliver several lectures and also the Convocation oration before that body at their next meeting in New Orleans, March 5 and 9.

Professor Julius Bauer is Professor of Medicine in the University of Vienna, and Physician-in-Chief to the Polyclinic. He is well known to many American students because of his clinic on Endocrinology, which is held in that hospital.

Professor Bauer has published extensively. His most noteworthy contributions to medical literature are his lectures on "Constitution and Inheritance for Students and Physicians"; his monograph with Dr. Conrad Steins on "Constitutional Pathology as Illustrated by Otology"; his monumental book on "The Constitutional Disposition of Internal Diseases" and his latest work on "Internal Secretions."

Professor Bauer is not only an interesting personality possessed of an encyclopedic type of mind, but he is also a great student, an admirable teacher and a splendid lecturer, who speaks English fluently. His coming visit to this country should give many of our physicians an unusual opportunity to learn at first hand his now much-discussed ideas of constitutional pathology and the endocrine glands.

President's Letter

THE annual secretaries' meeting was held at the St. Paul Hotel on January 11, 1928. The object of this was two-fold: to inform the various county societies on the affairs of the State Association, and, more important still, to stimulate and develop the county societies by contact with each other.

The meeting opened at 9:00 a. m. with reports from the chairmen of the various newly appointed committees, outlining as far as possible the work for the year. Then the meeting was thrown open and every secretary was invited to talk on anything he saw fit. The discussion brought out one thing conclusively, that a business-like and enthusiastic secretary is the greatest asset a society can have. There were sixty-two men present at this meeting and, although all were invited, there were ten societies not represented, and as is generally true at any conference of this kind the ones who were absent probably needed it most.

At the luncheon the Basic Science Law was discussed and the operation of the board described by Doctors Scammon, Bell, and Boyer. Their impression was that the board was doing everything it was intended to do, namely: raise the standards of medical practice in the State of Minnesota, and doing it with a minimum of friction.

H. Martin Johnson representing the Pharmaceutical Association asked for more coöperation between the two associations on problems of mutual interest. The city press was represented by Mr. Leo Owens and the rural press by Mr. Sam S. Haislet. The newspapers are apparently anxious for any publicity along proper lines. Their problem is to find out what the medical profession wants in the way of publicity. Dr. H. M. Johnson outlined what may confront us in the next Legislature, and voiced the warning that we must be prepared. Dr. Wilson described a health publicity campaign in a country newspaper by a county society.

Dr. W. F. Braasch made several constructive suggestions for county societies and outlined a plan for yearly district, economic and social meetings under the leadership of the councillor. Dr. Workman discussed the finances of the State Association and emphasized the need of conserving our funds and building up a reserve for the future. Dr. Erling Hanson told how Hennepin county keeps contact with the press and also with various health organizations and finally Dr. Oppegaard of Crookston told us how they run a live society in the Red River Valley. One was again impressed with the value of live secretaries.

The council and Dr. George Earl's committee met at dinner and the council meeting ran on to midnight. It is astonishing how many problems come before the council: finance, ethics, policy, membership, State journal, etc. All in all, it was a very instructive day. Secretaries should be, and as a rule are, the best informed men on society.

The next morning at 9:00 o'clock the regional officers' conference opened. This is not a new medical society (many have asked that question). It was a conference of the presidents and secretaries of the adjoining States of Wisconsin, North and South Dakotas and Minnesota; the object being to discuss questions of administration, legislative programs, public health education and many questions which are common to all States. Iowa was invited but no one came.

Dr. McGovern, president of the Wisconsin State Society, occupied the center of the stage. He is an enthusiast and has done a great deal for Wisconsin. While his brother was Governor of the State, the two of them put over a legislative and public health program which places Wisconsin ten years ahead of the rest of the country. Dr. McGovern is "sold" on Wisconsin and he sold a good deal of it to the rest of us.

From New Rockford, North Dakota, Dr. John Crawford brought the news that the statute of limitations which had been reduced to two years by previous activity was put back to six in the last session of the legislature due to the lack of organization on the part of the State Medical Association; consequently he said the State is overrun with ambulance chasers and malpractice suits. This is a lesson for Minnesota. South Dakota is organizing for a Basic Science Law campaign under the able leadership of Dr. S. M. Hohf, with good prospects of success.

This meeting lasted until 3:00 p. m. and it was decided to have another meeting A. M. A. week in Minneapolis. Everyone felt it was a very useful conference and should be a yearly occurrence.

This closed the session, two days of meeting and eating under the same roof. One might characterize it as a physical and mental marathon: all of it worth while. I wish every member might do it once—like myself.

C. B. Wright

(See Postscript on Page 194)

EDITORIAL

MINNESOTA MEDICINE

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Chiropractic and Naturopathic Schools

It is doubtful whether the average physician, not to mention the average layman, has any conception of just what a Naturopath is. Doubtless a Naturopath would have difficulty in intelligently defining himself. It might be said that the Naturopath holds a somewhat similar position to the chiropractor as the latter does to the Osteopath. When the curriculum of the osteopathic schools was lengthened, the field was opened for another short-cut school for "doctors" and chiropractic was fashioned from a rib or rather the spine of Osteopathy.

If the science and art of the practice of medicine did not have insurmountable limitations and if the medical profession, like all professions and vocations, did not include in its membership incompetent and dishonest individuals, there would be no opportunity for any practitioners outside of the medical profession. Because, after all, doctors of medicine are those members of society who devote their attention to the study of the healing art both as handed down by preceding generations and as developed in recent years. The responsibility of the organized profession in watching its membership is only too apparent.

The belief is sometimes expressed that we as a profession should ignore in every way irregular cults as they arise from time to time, on the theory that if such cults have no excuse for existence, they will naturally die out. Opposition seems to stimulate them to survive the longer.

There is evidence that the phenomenal rise of chiropractic has reached its summit and is rapidly on the decline. That the cult was ever dignified by legislative act through the institution of a State Chiropractic Examining Board was a gross blunder for which the public has itself to blame. Whether the lethargy of the organized medical profession was partly to blame for not informing the legislators and public in general depends on one's viewpoint as to how far we are our brother's keeper.

The power of an informed public opinion on any subject cannot be overestimated. The report by the Council on Medical Education of the American Medical Association, which appears on page 176 of this issue, is authoritative and gives a brief summary of the present status of the chiropractic and naturopathic schools throughout the country, the two schools in Minnesota being described more in detail.

Meeting of the Board of Control

It was the writer's pleasure to attend, on Feb. 7, 1928, a meeting called by the Board of Control of the heads of the various Minnesota state institutions and the superintendents of the tuberculosis sanatoria, at the Gillette hospital in St. Paul.

This relatively little known and somewhat hid-

den state institution reflects the very greatest credit upon its founder, the late Dr. Gillette, and upon Dr. Chatterton and his medical staff, who succeeded him.

On the day of our visit they had about two hundred and forty resident patients, and stated that some twenty-seven others reported as "outpatients" for continued observation, inspection and treatment. Thus, one can see, their youthful and happy graduates have increased very rapidly.

The skins of many children exposed in the solaria to light coming through special glass, seem to disprove the idea that our winter sun is too oblique in its incidence and our urban centers too smoky, to let much ultra-violet ray through; for these children showed unmistakable sunburn, as did the nurse in charge.

It is stated that "no one deserves a greater degree of happiness than they give"—and on this basis, even those children hanging in apparatus by their necks evidence little fretfulness or pain; and the far more than busy superintendent, Miss McGregor (who manages to maintain this institution at a per capita daily cost of $2.00) seems to radiate the greatest happiness of all! Those who have not seen these ideal schoolrooms and the artistic auditorium within the Dowling memorial, should certainly do so when the opportunity comes. Notice the spirit displayed by the teachers and the attendants, and do not fail to see and hear the parrot.

Curiously, Dr. Chatterton reports that they now receive very few tuberculous joint cases. The largest percentage represent post-polio paralyses; next in order come the aftermath of neglected and certainly preventable rickets. Most of the tuberculous cases come from rural districts, indicating, he thinks, that the urban control by boards of health and the pasteurizing of milk, have done much to cut down bone, joint and gland tuberculosis within our cities.

The heads of the insane and correctional institutions might well listen very attentively to Dr. E. C. Rosenow, of the Mayo Foundation, speaking on encephalitis. Certainly, "a disease that maims and distorts minds is more to be dreaded than one which cripples and deforms the body." His slides, and the movie demonstration of the antics of his inoculated and experimental animals, speak most forcefully for the correctness of his conclusions. It was his belief that what are called "late sequelæ of encephalitis," are not the result of the initial disaster, but the continued working of the same etiology. As he has repeatedly stated before, he is able to culturally identify a "pleomorphic streptococcus" of varying size and filterability; inoculation of this microbe into rabbits produces the clinical pictures seen in man of lethargy, myoclonus, torticollis, etc. Hiccough and chorea become peripheral evidence of central nervous diseases, although, fortunately, these noisy, acute evidences, sharply in contrast to the hidden and silent forms, do not produce the late Parkinsonian and other deadly results. He discussed the rheumatic and the encephalitic types of chorea—in fact, in correlating and connecting up what has been termed "influenza," with encephalitis, he believes in a common etiology in the one instance with epidemic influenza a "pneumotrophic microbe, and in the other a neurotrophic affinity."

His are striking and epoch-making assertions. Scientist Rosenow does not need the obvious commendation of an audience as uncritical as he had. If, as a principle of law, our forefathers were right in demanding that they should be judged by their peers, one can well state that the time should be hastened when the matter presented by Dr. Rosenow should be weighed and sifted without prejudice and hesitation, by those only who are competent to act as judges—namely, those engaged in similar work. In the meantime, his hopeful attitude on the eradication of foci of infection; his offering of a serum for recent acute cases; and his hopefulness for some improvement even, from the use of a properly made stock vaccine—all deserve our very highest consideration.

Some features pertaining to the meeting of the sanatorium executives and the Board of Control deserve a special communication.

E. L. T.

Minnesota Medical Alumni Reunion

No better opportunity could be afforded than the American Medical Association convention in Minneapolis in June for a get-together of all the alumni of our University of Minnesota medical school. So many of the classes are so small and their members so widely scattered that periodical class reunions are almost unheard of. There isn't a university medical graduate who would

not "get a kick" out of seeing former friends and acquaintances of undergraduate days. It is safe to say that in all probability another fifteen years will doubtless elapse before the American Medical Association will again meet in Minnesota and the present favorable opportunity present itself for a wholesale reunion of medical graduates.

We are for such a reunion and if you are one of the 1,800 graduates of our state medical school, we hope you will catch some of the enthusiasm of the reunion committee headed by Dr. N. O. Pearce and will be on hand at the banquet and entertainment on the evening of June 13. For those who are golfers a tournament is being arranged for the afternoon of the same date. Bear the date in mind, the thirteenth, and signify your intention of being on hand to Dr. Pearce, 823 Nicollet Avenue, Minneapolis, Minnesota.

Begin right now to talk it up to your alumni associates.

Basic Science Law Violator

The test of the pudding is in the eating. So is it with the new Basic Science Act. Time alone can tell whether the teeth in the Act as passed are to prove effective or whether what has been everybody's business is to continue to be nobody's concern. Probably the viewpoint of the jury as to the importance of the possession of a license to practice medicine will determine as much as any other factor how effective the new law will be.

The first instance of an arrest under the provision of the new Basic Science law was that of Dr. Boyd Williams of Minneapolis, which took place in February. Dr. Williams, although possessing an M.D. degree and having practiced some twenty years in Minneapolis, has been doing so without a state license. Although licensed in Wisconsin some years ago his qualifications did not warrant the issuance of a license in Minnesota. He was refused a license by the Basic Science Board and, proof having been obtained that he has been practicing without a license, a warrant was issued for his arrest.

Physicians throughout the state are urged to submit evidence where individuals are practicing without licenses. The evidence, however, is necessary if irregularities are to be corrected.

ASSOCIATION ACTIVITIES

CONFERENCE OF SECRETARIES

THE MEDICAL PROFESSION AND NEWSPAPER PUBLICITY*

MR. LEO OWENS—Mr. Chairman and Members of the Minnesota State Medical Association:

Your program notes that my subject today is "The Medical Profession and Newspaper Publicity." This reminds me of the backwoods citizen who, when he heard for the first time of the strange proportions of the giraffe, exclaimed, "Thar ain't no sich animal!" Publicity and the doctor too long have been strangers for their mutual benefit, but this has not been the fault of the newspaper. Until physicians withdraw themselves from the cloak of mystery and shyness that has enveloped medicine and its practice, I fear that this false misunderstanding must exist.

I do not like the word "publicity." We in the newspaper offices abhor its use, and I will tell you why. When anyone comes to us and speaks about publicity, we wonder what he has to sell; whether he wants the news columns or the advertising columns, because the editorial department is concerned solely with matter that pertains to news or the dissemination of interesting information—interesting not to a group alone, but to the broad general public; in other words, the mass mind.

Now, contrary to the general belief in the medical fraternity, medicine is News. It pertains to Life itself, the most cherished possession of every human being. Why, then, should the advance of medicine and surgery be concealed? I grant that there are cases of announcements of new cures, discoveries and inventions that are pure fakes. But there are others that are pure gold. Therefore, if medical men have so tested a particular cure or device that will prolong or sustain life until they are satisfied with it, let them be the first to tell the world about it. And I promise that the newspapers will be only too eager to assist.

I am happy to know that for the past year the Ramsey County Medical Association has had a committee working with the newspapers. I am informed that this committee already has been very valuable in assisting our newspapers by standing ready at all times to answer questions, to see that medical news is set right before the public. We appreciate the assistance of this group and hope that this coöperation will increase in efficiency and strength.

Suppose an invention of assistance in the practice of medicine comes to our city. It has been tried out and found to be successful. It fills a need in a community. Be the first to tell your newspapers about it. Explain it in words that a layman can understand. When insulin was announced, the discovery was printed all over the world. Think how much more

*Remarks by Mr. Leo Owens, Publisher of the St. Paul Dispatch and Pioneer Press, at the Secretaries' Conference, Saturday, January 14, 1928, at the St. Paul Hotel, St. Paul, Minnesota.

interesting and effective it would have been if the County or State Medical Society in Minnesota could have issued a statement for local consumption.

We, on our part, agree to consult and advise with you when news pertaining to your profession comes to our desk. We will ask your opinion about it. If you see fit to caution the public to take it with a grain of salt, we stand ready to print your caution. We can do no less.

The thing to remember is that a newspaper's standing in the community is based on confidence. You know what confidence means to the practitioner. We cannot any more afford to tamper with that confidence by publishing false and misleading information than you can by experimenting with your patients. Therefore, truth is to our mutual benefit.

Now, as to the gathering of news for publication: The newspaper has coming into its office from all over the world a vast amount of material. You can readily realize that, if all this were printed, your newspaper would resemble the "Five Foot Shelf." Editors who are trained in the handling of news are employed to publish, in their judgment, the best of the news; that is, news that will interest the great majority of readers. These men, with this training, know that medical news or information comes among the first items of public interest.

It is not the sole purpose of the newspaper to furnish news. It must also assist in educating its readers. For that reason it publishes learned articles. It devotes a column or so to medical advice, the care of the home, the proper guidance of the child, etc. It also must entertain, assist in retaining the morale of the people by publishing things that contain a smile.

Let us sum up the newspaper's function briefly.

First—To furnish news.

Second—To educate and inform.

Third—To entertain.

You are chiefly concerned with the first and second subjects. We are ready to assist, but we cannot help unless you are willing to coöperate. Will you?

REPORT OF COUNCIL

DR. H. M. WORKMAN—Mr. Toastmaster and Gentlemen:

Concerning the finances of the State Association, there is but little to add to the published financial statements of other years. The income as you know is practically all from dues. We have a few over 2,000 members; this will be increased, I think, a hundred or more by the slow payers. That will give us over $30,000 from that source. Add to that the earnings of the State Medical Journal, possibly $1,000, and the interest on bank balances of $200, will give us near $31,200.00. Besides this there is now about $12,000 in the permanent investment fund. That has been slowly growing for many years. Some day, I hope I may live that long, we will see the dream of the Father of that fund, the late R. J. Hill, come true. We will then have a home of our own which will be a source of income and stop the outgo for rent. While we are now paying only $300 the space for our files grows and our office force will increase in number and then we must have more room. We are now under great obligation to the Minnesota Public Health Association for space and many other favors but when they need this room we must move.

We are paying $2.00 per member to MINNESOTA MEDICINE, that takes over $4,000.00. The secretary's salary is $3,000.00, and his traveling expenses about $500.00, stenographers and clerks $1,500.00. This, like some of the other items, is only estimated, but cannot be much less and may grow to be considerably more, depending on the work of the Committees. Telegraph and telephone expense is about $200.00. The treasurer receives $100.00 and his expense of about $30.00; most of that must go for postage.

The annual meeting of the Association costs on an average about $1,200.00; with the meeting of the A. M. A. in Minneapolis as the guests of the State it may cost more this year. The next item I feel rather diffident about mentioning, that is the expense for special meetings of the Council, which includes president, president-elect, secretary, treasurer, and nine councilors. A generous allowance by the Council for the 13 men is $200.00, out of which they pay their postage, railroad fare, and hotel bills. I am sure that it is often less than $100.00.

The legal expense is greatly reduced since we abolished the medical defense, but we still have a few hang-over cases and the council needs legal advice. This is estimated at a thousand dollars. If the "cults" decided to test the Basic Science Bill, as they have threatened to do, we must tender the attorney general the assistance of our attorneys, so this item may prove very inadequate at the sum stated.

This conference was estimated to cost $400.00. The attendance is better than was expected, and, judging by the way the "chow" has disappeared, we underestimated the cost.

I think it was Councilors Wattam and Savage who, being ladies' men, generously recommended that the Auxiliary be allowed the sum of $100.00, and this is gladly paid.

The item Miscellaneous Expenditures of $2,000.00 has been criticized as being too large for such an indefinite classification. It can not well be subdivided as it includes stationery for the various officers, postage for the secretary's office, express, drayage, street car fare for office girls sent on various errands, premium on the treasurer's and secretary's bonds, typewriter and mimeograph supplies, thumb tacks and many other incidentals itemized on the vouchers.

These vouchers written by the secretary must first be approved by the president of the Council and the treasurer. The books and vouchers are audited by a committee from the Council and finally are gone over by expert accountants.

The money to be spent from the Educational Fund this year will likely not reach the sum allowed in the budgets—that of $3,000.00. You know headquarters in this or any other high class hotel costs money. If

the committee entertains a member of the House or Senate and he has a Newburg lobster appetite, you will not get far if you suggest that a ten cent dairy lunch will be cheaper.

Last year one item of considerable expense incurred by the legislative committee was a copy of Morris Fishbein's "Medical Follies." A copy was presented to each legislator and that, added to the plausible arguments of Herman Johnson and his Committee members, won for us the passage of the Basic Science and Medical Practice Acts. If you will stop to think what sacrifices this Committee made in time, health and loss of business for the benefit of the rest of us, we can well say all honor to Johnson, C. B. Wright, J. T. Christison, S. H. Boyer, Charles Bolsta and L. Sogge and with the new members added to that committee by Doctor Wright it is greatly strengthened and whatever expense incurred was small and legitimate, considering the results, which were great beyond our expectations. Their work is not yet done. Those "Cult Birds" die hard and we must prove to them that they are dead. If there is a resurrection for such bodies, it must be in some other state than Minnesota.

The Public Health Education Committee, and that is George Earl's committee, is allowed $5,000.00 and the results will show that this money has been well expended.

The Hospital and Medical Education Committee is allowed $250.00. The other Committees may have small expenses to meet, but the total will not exceed a few hundred dollars, with the possible exception of the Historical Committee. Their work is not fully outlined but they are going to need money for a stenographer and postage.

The total expenses, therefore, will not be less than $26,000.00 and maybe more, leaving a surplus of some $5,000.00 for emergencies.

The records, as you heard, of the Basic Science Board show that there are some 1,200 physicians in this state who are not members of the State Association. Now something is rotten in Denmark when the Councilors, State Secretary, local Secretaries, and other officers *drawing pay* cannot get most of these men into their local societies. It is the worst kind of bunk to say that one in every three physicians in this state is not worthy of membership in a local society. Better is it to confess that a number of us are not qualified for our jobs. We needs must have every reputable physician enrolled. We want his influence and help and need his dues. Go home and tell your local Society to do away with petty professional jealousies. Let us add some 800 or 1,000 names to the membership roll. Be missionaries. Few can harm us, and we can benefit them all.

Our membership has gradually grown under the increase in dues. We have accomplished so much with the funds thus secured that I hope in another year or two at the most we can materially reduce the dues if you wish.

Or to figure it as Dr. Savage does:

Your $15.00 to the State Association is budgeted by the Council as follows:

MINNESOTA MEDICINE—which is recognized as one of the best of its kind in the United States	$2.00
Administrative expense—including salaries of Secretary, Treasurer, stenographers, rent secretaries' conference, Women's Auxiliary, annual meeting, legal advice, etc.	5.25
Deficit from first year's educational work	1.50
Public Health Education	3.50
Committee on Hospitals and Medical Education	.12
Reserve	2.63
	$15.00

On the basis of the average earning capacity of the physicians of the State being $5,000.00 per year, your dues of $15.00 annually represent a tax of 1/3 of 1 per cent.

MISCELLANEOUS

RICINOLEATED TOXIN

On page 79 of the February number of MINNESOTA MEDICINE appeared an extract from the American Medical Association Journal of Dec. 17, 1927, that reflected upon the efficacy of ricinoleated scarlet fever toxin. Almost simultaneously a letter from Dr. W. P. Larson in answer to the above mentioned statement appeared in the American Medical Association Journal and is herewith reproduced. As a matter of fact active immunization against scarlet fever is so comparatively new that final judgment as to its value must be deferred. Much progress has been made in the effort to vaccinate against scarlet fever since the isolation of the specific streptococcus by the Dicks. It is only through laboratory investigation and clinical trial such as has been conducted by Dr. Larson that the ultimate goal will eventually be reached.

To the Editor: In *The Journal,* Dec. 17, 1927, the question is asked as to the present status of the single dose immunization against scarlet fever with ricinoleated toxin. In the reply the statement is made that "it is hardly to be expected that the addition of a 'detoxifying' agent will increase the immunizing properties of a toxin." This statement, I believe, is misleading.

The purpose of a detoxifying agent is not to step up the immunizing properties of a toxin but rather to make it possible to give toxin in sufficient dosage to stimulate immunization processes. The antitoxin in the toxin-antitoxin mixtures used to immunize against diphtheria is nothing other than a detoxifying agent. Without the use of antitoxin it would be impossible to give diphtheritic toxin in sufficient dosage to stimulate immunity, because of the severe reaction that would result. The anatoxin of Ramon as well as toxoid are diphtheritic toxins treated with detoxifying agents.

In their early work with bacterial toxins, Roux and Yersin found it necessary to use iodine trichloride as a detoxifying agent in efforts to confer a basic immunity against diphtheria in experimental animals. It is doubtful whether any attempt to immunize against a toxin will ever succeed when some detoxifying agent is not employed, because of the severe reaction and the number of doses that would be required.

Gabritschewsky, who first discovered scarlet fever streptococci toxin, and who recommended its use as an active immunizing agent as early as 1907, found that the toxin caused severe reactions if injected in immunizing doses (Berl. klin. Wchnschr. 44:556, 1907).

Sodium ricinoleate seems to be a suitable agent for detoxifying scarlet fever antigens.

With regard to the one dose method I should like to point out further that there is no reason why repeated doses may not be given if desired. Published reports show that one dose of the ricinoleated culture gives a 10 per cent higher incidence of negative skin tests than the five doses of the naked toxin also recommended. It would therefore seem that ricinoleated antigen has a decided advantage over other types of vaccine.

W. P. Larson, M.D., Minneapolis.
Professor of Bacteriology and Immunology,
University of Minnesota Medical School.

—Jour. A. M. A., Jan. 28, 1928.

OBITUARY

Dr. Herman G. Franzen*

Herman Gustavus Franzen was born in Wedum, Sweden, on Jan. 14, 1873, the son of John Carlson Franzen, contractor and farmer. He came to America in his boyhood with his parents. He graduated from South High School, Minneapolis, with an outstanding scholarship record, having worked his way through school.

He taught school in the Dakotas, between college terms, and by this method was able to attend the University of Minnesota Medical School, and later the Northwestern University Medical School at Chicago, where he received his M.D. degree in 1905.

After this he took special work in Surgery at the Wesley Memorial and Cook County Hospital in Chicago.

Dr. Franzen began his practice in Minneapolis immediately after completing his course, and specialized in surgery, being on the staff of Asbury Hospital. He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, of the Athletic Club, the Automobile Club and the Elks Club, and a 32nd degree Scottish Rite Mason.

He died January 16, 1928, and is survived by four brothers, one sister, and a widow.

A vigorous man of action, he had made for himself a successful life against odds, and had left his work while still in his prime, with no dimming of his powers, and at the height of his efficiency.

*Read at the regular monthly meeting of the Hennepin County Medical Society, held Feb. 6, 1928.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

INTERSTATE POST GRADUATE ASSOCIATION

The Spring Assembly of the Interstate Post Graduate Association will consist of a tour of the South and West starting at Chicago, May 16, and visiting medical centers at St. Louis, Nashville, New Orleans, Dallas, Los Angeles, San Francisco, Seattle, Portland, Denver, Omaha and ending at Rochester, Minnesota, June 8, whence participants can conveniently reach Minneapolis for the American Medical Association convention, June 11 to 15, inclusive.

The fourth annual consecutive Foreign Assembly sails from New York, June 16, for medical centers in Paris, Berne, Zurich, Munich, Vienna, Budapest, Prague and Berlin.

Further information may be obtained from Dr. W. B. Peck, Managing Director, Freeport, Illinois.

CATHOLIC HOSPITAL ASSOCIATION AND HOSPITAL CLINICAL CONGRESS OF NORTH AMERICA

The thirteenth annual convention of the Catholic Hospital Association of the United States and Canada and the second annual Hospital Clinical Congress of North America will be held in the Cincinnati Music Hall, Cincinnati, Ohio, June 18 to 22, inclusive, 1928. The fourth annual convention of the International Guild of Nurses will be held at the same time, in the same building, at night meetings.

This convention and congress will be one of the largest and most important hospital meetings of the year, and will comprise general scientific meetings, special clinics or demonstrations of hospital departments, and three hundred special commercial and educational exhibits. Outstanding authorities in medicine, surgery, pathology, nursing, dietetics and hospital administration, architecture and engineering will lecture and demonstrate in specially planned clinics representing the various departments of the modern hospital. A professional program of the highest interest and value is now being formulated, and all persons interested in medical and hospital service are cordially invited to attend. Further information may be obtained from John R. Hughes, M.D., Dean of the College of Hospital Administration, Marquette University, Milwaukee, Wisconsin, who is General Chairman of the Convention and Congress.

RICE COUNTY MEDICAL SOCIETY

At the meeting of the Rice County Medical Society held in Faribault, Minn., January 26, Dr. W. H. Robilliard, of Faribault, gave an excellent report of the meeting held in St. Paul, January 14, for the consideration of the present day problems of hospital and medical education, after which he stressed the importance of collections, with particular reference to habitual "dead-beats"

who can, but will not, pay for services rendered. The subject aroused considerable discussion, and was then referred to the publicity committee to investigate ways and means to cope with this growing evil. Members of the publicity committee are Drs. W. H. Robilliard, S. B. Haessley and C. A. Traeger.

Dr. J. Moses, of Northfield, gave a report of a recent automobile accident in which the patient suffered a rupture of the aorta.

MINNEAPOLIS SURGICAL SOCIETY

Dr. Stephen H. Baxter will be the next president of the Minneapolis Surgical Society, to succeed Dr. H. B. Sweetser. He was elected at the last regular meeting of the society and will assume office in September. Dr. A. T. Mann was elected vice-president and Drs. W. D. White and E. C. Robitshek, councilors, the former to succeed Dr. Baxter. Dr. T. H. Sweetser was re-elected secretary-treasurer.

A dinner meeting will be conducted in March at the Nicollet hotel. Dr. Dallas B. Phemister of Chicago will speak on "An Experimental Study of Wound Shock."

HENNEPIN COUNTY MEDICAL SOCIETY

Dr. A. E. Hedback was elected president of the Hennepin County Medical Society at the annual elections. Dr. Stanley R. Maxeiner, retiring president, becomes chairman of the executive committee. Other officers are Dr. E. L. Gardner, first vice-president; Dr. J. M. Hayes, second vice-president; Dr. Erling W. Hansen, secretary-treasurer; Dr. T. A. Peppard, librarian.

Dr. Stephen H. Baxter and Dr. Maxeiner were elected to the executive committee for three years. Dr. A. S. Hamilton and Dr. Jalmar Simons were elected to the board of censors and Dr. J. Frank Corbett and Dr. George D. Head were elected to the board of trustees. Dr. J. G. Cross was named to fill the unexpired term of Dr. A. W. Abbott, deceased.

Delegates to the state convention are Dr. W. H. Aurand, Dr. Stephen H. Baxter, Dr. F. A. Erb, Dr. J. M. Hayes and Dr. R. T. La Vake.

AMERICAN MEDICAL ASSOCIATION DELEGATES

The apportioning of A. M. A. delegates from the component state associations will depend on the membership April first. Minnesota formerly had but two delegates but during the last three year period, which includes the 1928 meeting, we have had three delegates. As the membership of the A. M. A. House of Delegates is limited to 175, it is highly important that all eligible physicians in the state pay their dues at once so that we will be properly represented in the national association the next three years.

OF GENERAL INTEREST

Dr. C. W. Kanne of Faribault has returned to his practice following an extended sojourn in California.

Dr. P. A. Smith and daughter, Lials, of Faribault recently returned from an extended trip through the Panama Canal zone and Cuba.

The St. John's hospital at Red Wing, according to a recent decision of the hospital association, will build an addition this year to cost $100,000.

Dr. J. A. Myers, Minneapolis, addressed the Pennsylvania Tuberculosis Conference at Harrisburg in January on "What constitutes a normal chest."

Dr. Charles L. Farabaugh has announced the opening of offices for the practice of medicine and surgery in the Mueller Building, Robbinsdale, Minnesota.

Dr. Simon of Rochester has gone to Birmingham, Alabama, where he will be associated with Dr. Hargis in the practice of surgery. His address is 1131 28th Street North.

An addition costing $100,000 will be built at St. John's Hospital in Red Wing, according to a decision made by the members of the hospital association at a meeting held in January. The hospital was established 25 years ago.

The new St. Cloud hospital built by the Sisters of the Order of St. Benedict was officially opened to the public February 12. Patients from St. Raphael's hospital, the predecessor of the new building, were moved into the new structure February 15.

Dr. O. V. Opheim has disposed of his practice at Starbuck, Minnesota, and is now associated with Dr. A. J. Moe at Sioux Falls, South Dakota. Dr. A. F. Giesen, formerly of Minneapolis, has taken over the practice of Dr. Opheim at Starbuck.

Ground will be broken in March for the three-unit addition to the University of Minnesota hospital. The addition will require about a year to complete and will mark the first major enlargement of the medical establishment on the campus since the cancer institute and the Todd Memorial were constructed in 1925.

Dr. Frederic W. Schlutz, head of the department of pediatrics at the University of Minnesota medical school, has returned from Havana, Cuba, where he attended the Pan-American Child Hygiene Congress as one of the three delegates appointed from this country by Secretary of State Frank B. Kellogg.

Dr. Robert Earl, Saint Paul, was re-elected president of the board of directors of the Northwestern Baptist Hospital Association and Dr. George Earl was re-elected president of the association at the twenty-second annual meeting held in January. The Mounds-Midway School

of Nursing which is conducted by the association has reported an enrollment of 108 student nurses this year.

Just before taking a train for Rochester the last day of January, Dr. H. M. Workman, of Tracy, fell on the ice and sustained a comminuted fracture of the fibula. This unfortunate accident, however, did not prevent Dr. Workman's visit to Rochester and presence at the banquet given that evening by Dr. Charles Mayo in honor of Dr. C. W. Hopkins, Chief Surgeon of the Chicago and Northwestern Railroad. According to last reports Dr. Workman has been visiting his office on crutches and is making an uneventful recovery.

The children's pavilion of the Abbott hospital, Minneapolis, built in 1921 by Mr. and Mrs. Thomas B. Janney, has undergone a re-organization under the trustees of the Westminster Presbyterian church of Minneapolis, with the coöperation of some twenty leading pediatricians of the city. The hospital, while affiliated with the Abbott hospital, will be known as the Janney Children's hospital. The new hospital will not affect the Abbott hospital in any way, as the adult patients will be cared for in the other buildings.

Six Minnesota graduate students of medicine have received appointments as fellows of the Mayo Foundation at Rochester, the graduate organization of the medical school of the University of Minnesota.

Together with 26 other students, they were selected from a field of several hundred candidates from all sections of the United States.

The Minnesotans are D. C. Ditmore, Rochester; H. A. Daniels, Staples; S. F. Herrmann, Welcome; H. M. Weber, Eden Valley; Hamilton Cooke, Hutchinson, and Hamline Mattson, Rochester.

"The Hebrew Physician" (HoRofeh HoIvree), the only medical journal published outside of Palestine which is written in Hebrew, has just made its initial appearance.

This Journal is under the editorship of Dr. Moses Einhorn and Dr. A. Goldenstein. It contains articles on general medical subjects and has a special section devoted to new Hebrew medical terminology. All physicians who are interested in this journal are requested to communicate with the editors, addressing them c/o "The Hebrew Physician," 286 West 86th St., New York City.

Postscript to President's Letter

(Continued from Page 186)

P. S.

We are trying to get some information on the economic situation of the medical profession in Minnesota. So, if you will send in the information asked below I will know you read this month's letter and will in another letter give you the results of the survey. Please mail to the secretary's office, 11 West Summit, St. Paul, Minnesota.

Number of years in practice.....
Gross income 1927.....
Net income 1927.....
Amount of income from salary or contract practice .....
My practice is (not) in Duluth, Minneapolis, St. Paul .....
I practice in.....County.

THE NORTHWEST CONFERENCE FOR CHILD HEALTH AND PARENT EDUCATION

With the progress of the work of organizing and planning The Northwest Conference for Child Health and Parent Education the interest of the profession and the public has grown with it. Some 125 organizations and institutions are now united in sponsoring the Conference, with their representatives making up a joint committee of 289 people from which the working committees have been drawn. Committees on Program, Places of Meeting, Publicity have been actively at work and their efforts show for themselves in a prospectus just issuing from the Press and now in process of distribution. This gives all the business arrangements of the Conference: places, hours and dates of meetings; details of reduced railway fares; hotel accommodations; registration; tickets, costs, etc.

A provisional program presents the topic for discussion and, so far as present negotiations permit, the personnel of the speakers. The completed program will be issued later.

The Conference will open at 9:30 a. m. on Tuesday, March 27, and will continue for three days. Morning, afternoon and evening sessions will be held at the Saint Paul Auditorium. Two luncheon round table meetings will be offered daily at the Saint Paul Hotel. A special luncheon meeting for men will be planned at The Saint Paul Athletic Club, on Wednesday, March 28, at noon, when an address will be given upon the subject of "Paternal Education."

A dinner meeting will occur at 6:30 upon the last evening of the Conference at the Saint Paul Hotel.

Course tickets, admitting to the eleven main sessions, will be sold at $3.00; single session tickets at fifty cents; luncheon tickets to holders of course or session tickets at seventy-five cents; to non-holders of tickets at $1.00; dinner tickets for the banquet at $2.00.

The Auditorium seats 3,200 and the promoters of the Conference, including the medical profession of the Twin Cities and from elsewhere, look to see it filled.

Announcement has been made of the consolidation of the Cuyuna Range hospital and the Miners' hospital at Crosby, Minnesota. The Cuyuna hospital is to be converted into a clinic and the Miners' hospital will be used exclusively for hospital purposes. Dr. Phil Hallenback, formerly on the staff of the Cuyuna Range hospital, is to become a member of the staff of a St. Cloud hospital. Dr. E. J. Pengelly will continue hospital work in Chicago. The new organization will be conducted under the supervision of Dr. B. A. Smith and Dr. F. A. Allen. Dr. E. W. Pollard of Minneapolis will become a new member of the staff of the combined institutions. Dr. S. S. Shannon, who has been with the Miners' hospital for the past ten years, will remain.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of Nov. 9, 1927

The regular monthly meeing of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, November 9, 1927. Dinner was served at 7 p. m., and the meeting was called to order by the President, Dr. John E. Hynes, at 8 p. m. There were 31 members and 1 visitor present.

Minutes of the October meeting were read and approved.

The following men were elected to membership in the Academy:

Dr. Owen W. Parker, Ely, Minn.....Associate Member
Dr. Hilding Berglund, U. of M.....Honorary Member
Dr. John S. Abbott, St. Paul.....Active Member

The scientific program of the evening was as follows:

Dr. A. W. Ide (St. Paul) read his Thesis on "Spinal Injuries." This was illustrated with numerous lantern slides.

DISCUSSION

Dr. W. A. Jones (Minneapolis): I think Dr. Ide's pictures are very graphic and very clear and show us many of the peculiar conditions which are found in the spine. But I wondered, while looking over the diagnoses and pictures, whether we are very much ahead of the chiropractor and osteopath in our diagnoses; we seem to have just as much trouble in making a diagnosis. They have no trouble at all; *they know,* and the people believe that they know. How are we going to enlighten the public as to the difference between the diagnosis of the regular and the cultist? I think they have made just as many mistakes as we have, but it occurs to me that we are very faulty in our methods of examination. I do not believe that I could recognize one-third of the cases of fractures of the spine. The question is, how are we going to overcome the tendency of the people to accept an unethical diagnosis when we have fallen down badly ourselves. The cultists have a method of taking pictures, too. Of course, those who have seen the pictures taken by a trained *x*-ray man will recognize and appreciate the difference between these and the pictures taken by the irregulars. Dr. Ide shows us very definitely in his pictures what is wrong; the inexperienced man shows us very indefinitely. The cultists attempt to diagnose, treat and cure subluxation of the spine. I would like to ask Dr. Ide if there are very many cases of subluxation, as is claimed, and whether they are usually intractable. After hearing Dr. Ide's paper and seeing his pictures, I am still puzzled by information given out in regard to fractures, subluxations, and dislocations.

Dr. J. F. Corbett (Minneapolis): I think the railroad and various insurance companies have paid out enormous sums of money for supposed injuries to the spinal column, and of course that has only been made possible by the plaintiff receiving support from the medical profession. It seems to me it is time we got together on this. It would almost pay the corporations to spend a large sum of money to have a large number of backbones of well people *x*-rayed because anomalies in development are exceedingly common. I have nearly a peck of vertebræ which I picked up in the dissecting room, showing all sorts of defects.

There was one thing that I was in hopes Dr. Ide might show us, and that was a Charcot spine. I never saw one I recognized and would like very much to know what they look like.

It occurred to me there was only one thing he did not mention, which is sometimes of great importance, and that is spina bifida anterior, with a mass that may be in the thorax, giving the appearance of two hearts; or in some instances in the abdomen they could be mistaken for abdominal tumors. These cases are not so rare that we can call them curiosities and I think they should have a place in the list.

Dr. E. L. Tuohy (Duluth): I would like to ask Dr. Ide if in his experience fractures of the transverse processes, low down, have been of sufficient importance or productive of enough discomfort to call for any especial surgical treatment later on.

Apropos of Dr. Ide's splendid discussion and reference to anomalies of the vertebra, I recall a very dramatic instance of a malingerer who had twice (before he came under our observation) collected considerable sums of money from certain companies, alleging in each instance that a fall had brought on his distress. Obviously he had found out in some way that he had such an anomaly, and in the early days of roentgen study it was not so easy to get the clear-cut information that we now have and that is so well illustrated in Dr. Ide's slides. In fact on one occasion this man was about to be operated on in a Chicago hospital by the late Dr. Ochsner. He circumspectly left the hospital sometime during the night before. In our hands he stood for all sorts of tests—spinal punctures, etc.—and apparently had a definite level lesion. While we were studying him the claim agent of the company became anxious and gave him a considerable sum of money. Leaving the hospital in Duluth, he took a taxicab to Superior, Wis. However, some one had the foresight to follow him up and have him observed, and he was caught throwing his crutches under the sidewalk and bravely walking off!

Dr. F. R. Wright (Minneapolis): Far be it from me to discuss injuries of the spine. They are entirely out of my line. What I was especially interested in was treatment. In several cases lately, I have used adhesive plaster up and down the spine. A four-inch strip of plaster extending from the cerebral vertebra to the sacrum will immobilize the spine so that the man can't bend forward.

Dr. J. F. Hammond (St. Paul). Dr. Ide spoke of the difficulty of diagnosing fracture of the spine and said, if I understood him, that the injury or fracture often was not diagnosed until operation. I would like to ask what the indications for operation are, and what operations are being done on them.

Dr. A. Schwyzer (St. Paul): Dr. Ide can be congratulated on the beautiful material he has. It was interesting to see the great variety of things we have in that one field. In order to discuss this demonstration one will have to pick out a number of detailed condi-

tions. I think it was Dr. Jones who mentioned subluxations. They occur especially between the atlas and axis, then along on the cervical spine and again between the sacrum and iliac bone. The latter are quite frequent and cause a lot of misery and I have seen a large number of them. A good many have come to the office and in treating them, while one man suddenly pulls with all force on the leg, another holding on the shoulders, you push the sacrum forward while pulling the ilium back. You hear a snap in the distinct cases and, after strapping, the patient may walk out happily surprised and practically well. Regarding the subluxation between the atlas and the epistropheus, at the last meeting of the Western Surgical Association, Dr. Jackson of Wisconsin, advised against immediate prompt reduction. I do not agree with this. I have had two such injuries. By pulling carefully on the head and slightly increasing the forward and lateral bending and also a little rotation, you can make an immediate reduction. It needs utmost care, but is by far the neatest result. Only you must have the exact anatomy of the joint before your eyes.

Another interesting condition, which was only mentioned, is Kummell's disease. That is due to injury with probably minute crushing, but at the time of injury without positive findings. An interesting case of this kind came under my observation. A young man had been wrestling and was thrown on his head. He had a good deal of pain and immobility of the head and neck. It was plain he had some definite injury, though by examining him closely I could not make out any particular condition. I kept him in the hospital with extension in bed and kept him immobilized, but the whole family of the patient, who said he felt so well, insisted on taking him home, though he was strongly advised against it. As the next best thing a high collar of strong felt was moulded and made to fit from over his shoulders to the chin and ears. The patient came back about six weeks later with a good deal of pain and the head sinking gradually to between the shoulders. The only thing to do was to make extension over a good many weeks. He finally got well.

Dr. Corbett mentioned spina bifida anterior. I would like to mention that this also occurs on the sacrum, especially in pre-sacral teratoma. These teratomata are known to reach at times into the sacral canal.

Dr. Ide's paper shows how thoroughly we have to look into the matter of injuries of the spine before we give an opinion. I would like to emphasize this by mentioning an interesting case we had recently. The patient was a woman, exceedingly nervous and almost hysterical, a farmer's wife from up north, who never had been away from home. Ten or twelve years ago we operated on her for severe lacerations. It took about 6 months before she could feel it had done her any good. I did not see her for many years after that. She had had children in the meantime. While I was away a year ago she was operated on by another surgeon for hemorrhoids. Then last winter she was brought to me by her husband, and was a most nervous woman. She had an unbearable pain at the anus. She acted unreasonable as soon as you touched the anus. Under a little gas we did some stretching for that. But she also had pain in the pubic region and was very hypersensitive on vaginal examination. She visited a large clinic and was told it was all nervousness. Another surgeon this summer took her tonsils out, but even that (!) did not help. She now declared she had to urinate every 10 or 15 minutes. I decided to do a cystoscopy, but on the appointed day I asked her how many times she had urinated the past night. She said "once," and I found out that she had nights when she did not urinate at all. So we desisted from cystoscopy in this unreasonably nervous person, but made an *x*-ray picture. And what did we find? The pelvis was all right, but the 3rd lumbar vertebra had a completely honeycombed appearance. It was a neoplasm of the entire 3rd lumbar vertebra, which was not otherwise deformed except bulging laterally on both sides. This illustrates what difficulties and surprises one is liable to encounter in this field.

DR. IDE (in closing): Dr. Jones suggested the position we are in with reference to the osteopaths. It seems to me that the general run of men practicing regular medicine ought to recognize the fact that there is such a thing as dislocation of the spine. Dislocations in the cervical spine and between the fifth lumbar vertebra and the sacrum are frequently seen. Dr. Jackson, of Madison, Wisconsin, in his recent paper, described dislocations at the upper end of the spine and suggests the treatment.

DR. HAMMES (St. Paul): Did you have any cord symptoms in the case where the spine was dislocated?

DR. IDE: Yes, we did. There was some question as to whether the patient had had a stroke or whether a fall had caused all the trouble. He had partial paralysis of one arm and one leg, but the involvement was not extensive.

The condition of spina bifida anterior probably should be mentioned but it is somewhat difficult to diagnose. I think it is well to take it into consideration.

We have never found it necessary to resort to surgery for fractures of the transverse process. These injuries are ordinarily cured by rest treatment.

Dr. Hammond inquires about surgery in these obscure fractures. I do not operate on these spines. In case an operation is done on the spine, when the field is exposed, the actual condition of the bone is often somewhat different than that shown by the *x*-ray picture. In so far as I am personally concerned, I believe it is inadvisable to operate on spines unless the indication is positive.

I wish to thank the members for their discussion of my paper, and I also want to thank you for my membership here.

DR. F. R. WRIGHT (Minneapolis) read a paper entitled "Preparation of Prostatic Patients for Operation"

DISCUSSION

DR. G. SCHWYZER (Minneapolis): Recently I planned to make a suprapubic cystostomy in an old man for retention of urine where I otherwise would have ap-

plied a duration catheter, but the man had such excruciating pain from a duration catheter which I inserted that I was forced to remove the same. I would like to ask Dr. Wright whether he had experienced such difficulty in keeping a duration catheter applied.

Dr. Wright (in closing): Answering Dr. Schwyzer's question about a retention catheter, it is not infrequent that a man will not be able to retain a catheter. In that case I have the patient catheterized every six hours. The effect of this will be shown by citing the case of an old Jewish friend of mine in North Minneapolis. He had an acute cystitis, and had about two ounces of residual urine. He could not retain a permanent catheter, and we were compelled to make a suprapubic cystotomy. His urine secretion had dropped down to 500 c.c., but at the end of two weeks he was again passing 1,800 c.c. I think this indicates the effect of emptying the bladder too quickly.

As far as the retention of the catheter is concerned, I think it is better to catheterize the patient until you have decompressed the kidney. If relieving the back-pressure in the kidney causes the suppression of urine, we can at least fill the bladder with water and attempt to raise the back pressure in the pelvis of the kidney. If we have made a suprapubic cystotomy we are not able to reduce this back pressure.

Regarding the size of the prostate, I have observed this: that on rectal examination we often find a fairly large prostate, when at the operation of this patient we remove only a very small tumor. This is due to the fact that the tumor produces a condition of edema of the prostate which we mistake for an increase in the size of the whole organ. Three times I have opened a bladder to remove an hypertropied prostate, to find that the tumor disappeared on pressure of my fingers; that is, that the increase in size in the prostate which I had mistaken for a tumor was due to a firm edema.

Dr. Gustav Schwyzer (Minneapolis) reported a case of carcinoma of the transverse colon in a young woman, who made a quick recovery after resection. Lantern slides were shown.

Dr. William Lerche (St. Paul) showed lantern slides illustrating the arrangement of the bronchopulmonary lymph nodes and the lymphoid masses in the lungs, and also slides of cases with enlarged bronchopulmonary nodes, calling particular attention to the latter as potent factors in the etiology of bronchiectasis in children. Slides were also shown of cases with abscesses in the inferior tracheobronchial lymph nodes, and Dr. Lerche's method of operation by puncturing the abscess through the bronchoscope.

The meeting adjourned.

Carl B. Drake, M.D.
Secretary.

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

SURGERY

SUPERVISORS:

DONALD K. BACON,
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

ON ENURESIS NOCTURNA: Hector Charles Cameron, M.D. (Guy's Hospital Reports, 1927, LXXVII, 482-489). Enuresis in childhood, always common, has, since the War, become more common; still much that has been written on the subject of the etiology may be dismissed as manifestly untrue, for instance, that it is a variant on masturbation or due to some organic abnormality. The hope of relief is so strong within the child's mind that some surgical procedure, with its confident suggestion of cure, may upon occasion succeed. Circumcision, distention of the bladder with graduated volumes of fluid, injection of fluid under the skin of the perineum, and other such devices, may have a strong suggestive effect, but certainly have no other.

The tendency to enuresis often waxes and wanes with the rise and fall in the general health. The removal of infected tonsils or adenoids may often cause so great an improvement in the general health that spontaneous recovery from enuresis is encouraged. In the great majority of cases the urine is normal.

A close study by the author of a series of cases has convinced him that enuresis is a disorder of purely functional nature and probably should be recognized as a manifestation of hysteria in childhood. In general, the child with enuresis is quick, sensitive and precocious. He wets the bed not because he does not care, but because he cares too much. Pessimism and over-anxiety on the parent's part may be quite as prejudicial as harshness or punishment in preventing the sufferer from regaining the necessary self-confidence. With the passage of years, with the growth of personality and character, enuresis almost always ceases. Whoever undertakes treatment and endeavors to assist the child to gain control must be equipped in some way with the power to restore self-confidence to the sufferer.

Harold E. Simon, M.D.

PEDIATRICS

SUPERVISORS:

CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

TREATMENT OF INFANTILE ECZEMA: Israel Binder, M.D. (Arch. of Pediatrics, January, 1928). Eczema may be defined as an acute, subacute, or chronic inflammation of the skin. It may be divided into two broad types: the wet or exudative type, usually occurring in healthy overfed babies, mostly breast-fed, and the dry type, found in undernourished babies.

Eczema Rubra.—This type affects the cheeks, forehead, scalp and not infrequently the ears, neck and cubital spaces, or any other portion of the body. It begins with the appearance of small, red, acutely inflamed papules which coalesce and exude serum. Crusts may form, which may become so hard as to form a mask over the face. Underneath these crusts the skin is raw and oozing.

In the acute stage, calamine lotion is used locally. If there is an undue amount of itching present, one per cent phenol with two drams of glycerin to six ounces is added. In cases where there have been pustules or where areas of infection have been superimposed, probably due to scratching by the infant, the author has used yellow ointment, which is a combination of equal parts of two per cent ammoniated mercury and two per cent yellow oxide of mercury. This secondary infection must be cleared up before any improvement can take place.

Tar finds its greatest use in this type of eczema. After infection has been cleared the author has been using ungt. picis liquidis, one ounce to one ounce Lasar's paste, without salicylic acid. Two c.c. triple distilled water is given intramuscularly, usually in the gluteal muscles. One injection is given weekly, unless we are dealing with a severe case; then it is given every third day.

Seborrheic Eczema.—This type of eczema, usually occurring on the scalp, is a very common condition. In mild cases, generally rubbing with warm olive oil and shampooing twice a week, then combing with a fine comb to remove the scales, is effective. In the severe cases, boric acid ointment is rubbed on the scalp for three successive days, several times a day, without removing the ointment. Resorcin grs. 10 to one ounce of boric acid ointment is then applied to prevent recurrence.

Intertriginous Eczema.—To prevent the irritation as far as possible is the first and important essential factor in the treatment.

R. N. ANDREWS, M.D.

THICK CEREALS AND CONCENTRATED FORMULAS: THEIR VALUE IN PYLORIC OBSTRUCTION AND VOMITING: Julian L. Rogatz, M.D. (Arch of Ped., January, 1928). Within the last few years a definite step forward has been made in the feeding of infants by the recognition of the value of thick cereals in certain types of cases, notably in vomiting due to pyloric stenosis, and the tendency to use more concentrated formulas in general.

Finkelstein uses as much as 20 per cent carbohydrate in concentrated albumin milk. Von Pirquet (Vienna) developed "Dubo" by doubling the caloric value of whole milk with 17 per cent sugar. Czerny-Kleinschmidt use a high fat content successfully in their butter-flour mixture by removal of the more volatile fatty acid from the butter and combining with starch. Healthy infants tolerate two-thirds milk without danger and even undiluted whole milk may be used in the new-born with caution. The infant is never too young for starchy food and the results are excellent.

In 1924 it was demonstrated roentgenologically and confirmed by a later series of roentgenologic studies (Hotz) that the infant stomach wall has the power of surrounding and grasping its food content—termed peristolic function (Stiller) and not to be confused with the more familiar peristaltic wave.

If one supply a food sufficiently "solid" to offer a desired resistance to the stomach wall, this at once results in a more tonic gastric musculature, permitting it to surround and retain the food by peristolic contraction. Due to concentration there is a smaller volume of food; the thickness of the food causes less air to be swallowed and the smaller volume, which incidentally is just as rich calorically as a more dilute formula, is more easily grasped.

Lindberg made the interesting observation that the peristolic function was more likely to appear in the infant when in the vertical position, as against feeding in the horizontal position. Often this change of position permits of proper emptying of the stomach and vomiting ceases.

Thus peristolic function is of great practical significance inasmuch as it definitely explains the value of thick cereals in various forms of vomiting, thereby placing a hitherto empirical therapy upon a scientific basis and completely justifying its use with greater confidence than ever.

R. N. ANDREWS, M.D.

COUNCIL PASSED

The notable success of many pharmaceutical products which have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in "New and Non-official Remedies" recommends not only the plan itself, but the wisdom of the medical profession in selecting these reliable "Council Passed" remedies for daily use.

These remedies are the result of research and clinical study. They have been announced in our pages and are worthy of further investigation on the part of our readers.

GYNECOLOGY AND OBSTETRICS

SUPERVISORS:
ARCHIBALD L. McDONALD,
LYCEUM BLDG., DULUTH

L. W. BARRY,
LOWRY BLDG., ST. PAUL

PROPHYLACTIC EXTERNAL VERSION: R. A. Bartholomew (Am. Jour. Obst. & Gyn., Nov., 1927). This article is concerned with the advantages of converting a breech into a vertex presentation during the latter months of pregnancy. From a small series of cases with breech presentation, the author estimates a direct fetal mortality of from 10 to 15 per cent as compared to 2 to 3 per cent with vertex presentation. The mother is spared a prolonged labor, and increased danger of cervical or perineal laceration or sepsis. The indications are breech or shoulder presentation, diagnosed in the latter months of pregnancy. The contra-indications are multiple pregnancy, pelvic contraction, dead fetus, previous Cesarean section, threatened uterine rupture, hydramnios, oligohydramnios, premature separation of the placenta, onset of labor, placenta previa, bicornuate uterus and eclampsia.

The objections are, possibility of mistaken diagnosis, prolapse of the cord, possibility of cord being caught about the neck, rupture of the uterus, premature labor or rupture of the membranes. The corrected position is not always permanent, and the procedure is difficult in proportion to the resulting disadvantages.

The author gives his experience with 54 breech presentations discovered in a series of 455 cases. Cephalic version was accomplished after one or more attempts in 53. The procedure had to be repeated several times in a number of instances. Seven were finally delivered in the breech presentation. Spontaneous cephalic version occurred twice after one or more failures by manipulation. The author believes that at present he can avoid 80 per cent of breech presentations. There was no fetal mortality or untoward complication which could be charged to the procedure.

Version is preferably done by turning towards the occiput, though following in the opposite direction did not cause extension of the head. The Trendelenburg position was not used in this series though it is recommended by some. Ether was used twice. No bandages or binders were used following version.

ARCHIBALD L. McDONALD, M.D.

Typhoid Vaccine.—This typhoid vaccine (New and and Non-official Remedies, 1927, p. 367) is also marketed in packages of 30 ampules (ten complete immunizations). The Gilliland Laboratories, Inc., Marietta, Pa. (Jour. A. M. A., November 19, 1927, p. 1783.)

EYE, EAR, NOSE AND THROAT

SUPERVISORS:
VIRGIL J. SCHWARTZ,
PHYS. & SURG. BLDG., MINNEAPOLIS

E. L. ARMSTRONG,
205 W. 2nd STREET, DULUTH

CHRONIC OTORRHEA. ITS RESPONSE TO CALOT'S SOLUTION: M. Reese Guttman, Chicago (Illinois Medical Journal, Aug., 1927). The almost limitless number of medicaments and procedures which have been employed at various times in the treatment of chronic discharge from the ear only serves to accentuate the fact that none of them is of outstanding value.

In the ordinary acute ear inflammation following a naso-pharyngitis the disease is limited to the tympanic mucosa and therefore heals readily in most cases. However, in the severe cases, especially when associated with scarlet fever and measles, a chronic discharge is apt to result. The deeper, submucous tissue, and even the bone, becomes involved, since the tympanic mucosa is, in fact, a mucoperiosteum which furnishes the bone its blood supply. A chronic osteitis with discharge is therefore often the result of these ulcerations. Much depends upon the virulence of the bacteria involved, the streptococcus mucosus being notoriously dangerous.

In favorable cases, granulations quickly cover the ulcers and bone, and are soon followed by new epithelium. In others, bone necrosis and even fistula may develop, followed by excessive granulation formation which prevents the ingrowth of normal mucosa and may be so great as to fill the tympanic cavity and even project into the external canal. These are composed of granulation tissue, not myxomatous, therefore the term "aural polyp," by which these are known, is a misnomer. The thin secretion from these granulations usually becomes purulent from secondary infection, therefore both these factors must be combated in order to obtain healing.

The Eustachian tube at times may drain ear discharges into the nasopharynx; occasionally, too, a mucoid overflow of secretions from the nose and tube, during an acute rhinitis, may escape through the ears as a pseudo-otorrhea. The latter is often found after a radical mastoid operation. Occlusion of the tube may result from adenoids, large lymph follicles in Rosenmüller's fossa, a hypertrophic tubal mucosa, posterior turbinal hypertrophy, or synechiæ after adenoidectomy.

Otorrhea due to cholesteatoma or chronic infective mastoiditis can be treated only surgically. Rarely there may be local pathology due to malignancy or to rare

infections, such as actinomycosis, or to a systemic tuberculosis, lues or diabetes.

The discharging ear may be compared to a fistula from skin to carious bone in any part of the body, only that here it happens to be the bone of the ossicles or tympanum; it is also analogous to a fistula from skin to mucous membrane, *e.g.*, fistula in ano, only in our case it is from the external ear to the mucosa of the nasopharynx.

Fotiade noted the great success of the use of Calot's solution in fistula in ano, in Bucharest, and tried it in chronic otorrhea. The composition of Calot's solution is:

Guaiacol	1.0
Creosote	5.0
Iodoform	10.0
Ether	30.0
Olive Oil	70.0

The first three are antiseptic, and caustic to the granulations, while the ether permits better attack by dissolving secretions covering the granulations. Bacteriolysis is increased through a diapedesis of polymorphonuclear cells. It is also stated that disintegration of these leukocytes releases their proteolytic and lipolytic enzymes for action. The discharge becomes thin and serous; the bacteria disappear and the few mononuclear cells characteristic of chronic otorrhea are replaced by large numbers of polymorphonuclear cells.

Out of 64 cases Fotiade obtained a complete cure in 61, or 95%. Of the others, one disappeared, one died of tuberculosis, and one required a radical mastoid. Of the 81 selected cases of the present series, 66, or 81%, were cured. There were 31 cases of otorrhea without mastoid involvement, 38 with *x*-ray evidence of mastoid sclerosis, and 12 with cholesteatoma.

All of the first group were cured, though the tonsils and adenoids were removed in 9 cases. Thirty-five of the second group were cured. Twelve cases required the addition of nose and throat treatment. Three, with a discharge of long standing and marginal perforations, required the radical operation. Except that the odor became less offensive, not one in the third group was benefited.

The treatment consisted in simple cleansing of the ear, mainly with tubular suction. The patient was then told to shake the bottle, instill 5 to 10 drops into the canal (affected ear uppermost) and make alternate pressure upon the tragus so as to pump the mixture into the tympanic cavity. At times it may be tasted in the throat. This is done nightly for a week. The secretion will then become thin and serous. Use of the solution is then stopped and boric powder insufflations are employed, until, in a few days, the ear is dry. If not at first successful the use of 60% silver nitrate on large granulations, or attention to the naso-pharynx, may be found necessary. Following this the mixture is used again.

VIRGIL J. SCHWARTZ, M.D.

MEDICINE

SUPERVISORS:
F. J. HIRSCHBOECK,
205 W. 2nd STREET, DULUTH
THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

CONCLUSIONS REGARDING TECHNIC FOLLOWING ONE THOUSAND INTRATRACHEAL INJECTIONS OF IODIZED OIL IN ADULTS: Stuart Pritchard, Bruce Whyte and J. K. M. Gordon (Bulletin of the Battle Creek Sanitarium and Hospital Clinic, XXIII, 1, January, 1928). A number of methods have been used to inject iodized oil into the bronchial tree, among which are the transglottic, subglottic, bronchoscopic and supraglottic.

The writers have employed the supraglottic method. This paper is based on the experience derived from a series of one thousand consecutive injections by the supraglottic method.

PROCEDURE

1. Instruct the patient that it is imperative for him to refrain from coughing and swallowing.

2. The anesthetic solution and oil should be warmed to prevent reflex cough and to facilitate the easy and rapid flow of oil over the mucous membrane of the larynx and trachea.

3. The pharynx and larynx should be sprayed with a 5 per cent cocaine or butyn solution. Two c.c. of a 5 per cent cocaine or butyn solution may be injected into the trachea by the use of a small syringe while the patient is instructed to inspire through the mouth. This opens the glottis and the anesthetic will find its way down the larynx.

4. In two or three minutes the patient should feel a lump in the throat. The oil can now be injected. Twenty c.c. of warm oil should be ready in a special metal syringe. The tongue should now be drawn well forward. By slight but constant pressure on the piston the oil is projected against the under surface of the epiglottis while the patient breathes deeply and quietly through the mouth.

5. At this juncture, again instruct the patient to refrain from coughing or swallowing. A tendency to cough may be overcome by the patient breathing more deeply while the operator pulls the tongue out and at the same time lessens the pressure on the syringe piston.

6. The curved cannula should not touch any part of the pharynx. The tip must not touch the epiglottis but should be placed in such a position that the flow of oil will impinge upon its under surface.

7. There has been some question as to the necessity of bronchoscopic aspiration of cavities before their injection with oil. Bronchiectatic cavities are apparently equally well filled whether the oil is injected before or after they are emptied. The high specific gravity of the oil (1,350) enables it to displace the bronchiectatic contents (secretions).

8. Quantity of oil necessary.—From 15 to 20 c.c. is usually enough for one injection. This will generally visualize a goodly portion of the lung field. Gravity

and aspiration are the forces which bring the oil to the terminal branches. Thirty to forty c.c. may be given if a more extensive field is to be investigated.

9. Position of the patient.—This depends on what particular part of the lung field the operator desires to visualize. As the great majority of cases requiring lung field visualization are suffering from some affection in the lower part of either lung, the upright position is the one more frequently used. If the lower right lung is under suspicion, the patient is instructed to lean slightly forward towards the right side, still keeping the head in a vertical position. The reverse is true when the left pulmonary base is to be visualized. If the middle or upper lung fields are to be studied, place the patient on a tilting table in the recumbent position, lying on the affected side.

10. Choice of lungs fields.—Many cases show no differentiating sign either from the clinical history, physical examination or radiological study. In such cases both lower lungs should be injected. It is preferable to wait twenty-four hours before giving the second injection.

SOME INDICATIONS FOR THE BRONCHIAL INJECTION OF IODIZED OIL

1. Cases of chronic cough associated with long-standing infection in the upper respiratory tract, particularly sinusitis.

2. Cases of cough with purulent expectoration giving the history of a previous pneumonia or the inspiration of an organic foreign body.

3. Cases of long-standing cough with little, if any, expectoration in the absence of frank pulmonary disease.

4. Obvious cases of bronchiectasis for the purpose of mapping the diseased area.

5. Cases of bronchial fistulæ.

6. As a therapeutic agent.

POSSIBLE COMPLICATIONS

1. The swallowing of the oil during the operation. Iodized oil is a chemical compound which disintegrates and liberates metallic iodine when acted upon by intestinal alkaline secretions. If the patient has swallowed any considerable amount of oil (fluoroscopic observation), a glass of hot water containing a dram of soda bicarbonate will often act as an emetic and prevent the oil from entering the intestinal tract. A dose of castor oil will expel the compound before there is time for disintegration and absorption.

2. In their series of a thousand cases they experienced six instances in which some slight untoward effects followed the injection of the oil.

CONTRA-INDICATIONS

1. Acute affections such as occur in the early stages of cold and influenza.

2. Acute active tuberculosis.

3. Very extensive and advanced pulmonary suppurations, particularly when the patient is extremely weak.

4. Advanced circulatory complications such as angina pectoris, aneurysm and cardiac decompensation.

5. Recent hemoptysis.

A. T. LAIRD, M.D.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

PENDULUM: BABY'S HEALTH DAY BY DAY. Editor not named. Pages not numbered. Chicago: The Professional Press, 17 North Wabash Avenue, 1928.

MODERN BAKING POWDER. Juanita E. Darrah, A.B., M.S., A.M. 125 pages. Illus. Cloth, $1.00. Chicago: The Commonwealth Press, 1112 South Wabash Avenue, 1928.

GYNECOLOGY. Howard A. Kelly, A.B., M.D., LLD., and collaborators. 1043 pages. Illus. New York and London: D. Appleton & Company, 1928.

PATHOLOGICAL PHYSIOLOGY OF INTERNAL DISEASES. Albion Walter Hewlett, M.D., B.S. Revised in memoriam by his colleagues under the editorial supervision of George De Forrest Barnett. 787 pages. Illus. New York and London: D. Appleton and Company, 1928.

THE NEW MEDICAL FOLLIES. Morris Fishbein, M.D., Editor of the Journal of the American Medical Association and of Hygeia. 235 pages. New York: Boni and Liveright, 1927.

The author alphabetically reviews all the cults with a brief description of each in the first chapter, including Couéism, Christian Science and Abrams' System. His satire, humor and fearless frankness in discussing these subjects are as evident as in his first book, "The Medical Follies." He writes relative to Christian Science, "If anything, it is scientific, since the practice of absent treatment has reduced the art of living without apparent work, to a science." In reference to Abrams, he states, "Abramism is to be credited with the most rapid and conspicuous rise and fall of any cult of our modern period.

Chapter two is devoted to beauty cults, including beauty clays and cosmetics. He derides the beauty doctors and irregular plastic surgeons. He criticizes the craze and fad for reduction, also Steinach and Voronoff method of rejuvenation. He discourses upon the improved methods of bread making and explodes the bread treatment for fat reduction.

His article on the "End of Eclecticism" is interesting.

He cautions the medical profession to be reluctant in believing all the literature referring to the results secured with physiotherapy apparatus. Many of these claims are far-fetched, to say the least, due to the element of commercialism.

The author delves into psychoanalysis, and Freudianism. In discussing Carl Jung, a disciple of Freud, he states, "He has lectured with great pecuniary emoluments. His nomenclature runs from the tongue of the four hundred more glibly than 'two no trump.'"

In conclusion he discusses medical ethics and the

physician of the future, in which he upholds the general practitioner and urges more coöperation with the specialist.

On condemning state medicine, he argues that after a graduate spends from twelve to fifteen thousand dollars in preparation, he must be content to accept a salaried position. "He is no longer a physician, he is no longer treating human beings for the relief of their ailments. He has become a tonsil mechanic, an adjuster of adenoids or an inspector of gonorrhea."

EDGAR W. BEDFORD, M.D.

SURGICAL DISEASES OF THE GALL-BLADDER, LIVER AND PANCREAS AND THEIR TREATMENT. Moses Behrend, A.M., M.D., F.A.C.S. 278 pages. 101 illus. and plates, 6 tables. Cloth, $4.00. Philadelphia: F. A. Davis Co., 1927.

The striking feature of this well-written volume is the discussion and portrayal of the variations in the anatomy of the ducts and blood vessels in the region of the foramen of Winslow. There are 38 drawings illustrating these variations. All surgeons will appreciate the need of keeping these variations in mind when operating on the bile ducts.

In the chapter on the surgical treatment of gallbladder disease special emphasis is placed on the importance of good exposure and other means of avoiding injury of the hepatic artery and the hepatic and common bile ducts. The problem is further emphasized in the last chapter, on the results of ligation of the hepatic artery in animals and in man. The book is well worth repeated perusal by anyone interested in the surgery of the biliary system.

THEODORE H. SWEETSER, M.D.

EXAMINATION OF CHILDREN BY CLINICAL AND LABORATORY METHODS. Abraham Levinson, B.S., M.D. 2nd edition. 192 pages. Illus. Cloth. $3.50. St. Louis: C. V. Mosby Company, 1927.

This text contains fairly complete suggestions for the collection of clinical and laboratory data from children. The subject matter is well arranged and well classified. The book is essentially an up-to-date guide to be used in the study of diseases of early life and the ideas presented herein will be helpful to all having to do with diseases of this period.

L. R. CRITCHFIELD, M.D.

THE HUMAN BODY IN PICTURES. Jacob Sarnoff, M.D., 112 pages. $2.00. Brooklyn, New York: Phys. & Surg. Book Co., 1927.

This little book is intended for use in collaboration with a visual text of a series of motion picture films, but the printed matter will contribute very little to the pictures. It consists of a bare recital of the various structures of the body arranged according to systems, and, in spite of its brevity, a feeble attempt is made to describe pathologic conditions and physiologic processes. The illustrations are small and many of them are not clear. It is merely a little manual of anatomy, physiology and pathology, too brief to be of any real value in the teaching of these subjects.

MARGARET WARWICK, M.D.

WANTED—Salaried appointments for Class A Physicians in all branches of the medical profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan Ave., Chicago. Established 1896. Member The Chicago Association of Commerce.

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LOCUM TENENS WANTED—Graduate of Minnesota, class of March, 1927, licensed in Minnesota. Available after April 12, 1928. Address C-166, care MINNESOTA MEDICINE.

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Write Chas. F. Bruess

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PHYSICIAN'S OFFICE EQUIPMENT FOR SALE

The office equipment of the late Dr. E. M. Clay, of Hutchinson, Minnesota, including therapeutic lamp, violet ray machine, optical case, and office supplies, is offered for sale. Also a good opening for a physician. Address Mrs. E. M. Clay, Hutchinson, Minn.

EXPERIENCED PHYSICIAN desires good location in tourist section of Northern Minnesota. Locum tenens work or assistantship to busy physician considered. Registered in Minnesota. Available at once. Address C-160, care MINNESOTA MEDICINE.

NOTICE: An elderly gentleman by the name of Flake has been reported to have been calling on members of the profession offering to repair surgical instruments. About September 1, 1927, this gentleman was given a pair of Robeton obstetrical forceps to be replated by Dr. G. S. Wattam, Warren, Minnesota, and nothing has since been heard of him. Dr. Wattam is anxious to obtain possession of this pair of forceps and would be pleased to purchase them from any physician who may have obtained them from this travelling salesman.